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Oil & Gas Association**

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May 28, 1997

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Re: Notice of Proposed Rulemaking on Establishing Oil Value for Royalty
Due on Federal Leases and on Sale of Federal Royalty Oil
(62 FR 3742) published January 24, 1997.

The Rocky Mountain Oil & Gas Association (RMOGA) is pleased to have the opportunity to participate in the Minerals Management Service's (MMS) proposed rulemaking for Establishing Oil Value for Royalty Due on Federal Leases and on the Sale of Federal Royalty Oil. As you know, RMOGA is a regional trade association representing hundreds of members, large and small, who account for more than 90% of the oil and gas exploration, production, refining, transportation and marketing activities in the Rocky Mountain states. Following are the Association's comments on the above-referenced proposal.

OVERVIEW:

The proposed rule is designed to shift crude valuation for royalty purposes away from posted prices in the field or area where the oil is produced and away from arm's-length contracts, except in limited instances. The proposal would use NYMEX futures prices as the starting point for determining the value of crude oil in most cases, while using Alaska North Slope (ANS) on the West Coast. The proposed rule will virtually eliminate arms-length transactions. This will occur due to a clause dealing with the purchase of oil during the past two years. Any company that has bought crude oil from an unaffiliated party during the preceding two years is barred from using the price received in an arm's-length transaction. An in-depth analysis reveals the use of exchanges, buy/sell agreements and calls on production (whether utilized or not) will also result in the disqualification from valuing oil using the arms-length transaction prices.

Oil companies oppose the use of the arbitrary NYMEX index methodology proposed by MMS. Extrapolations from this source will likely overstate the value of crude barrels, thus invalidating the real value at the place and time of sale for a specific grade of oil that doesn't include transportation costs and quality differences. As such, it will almost assuredly cause an artificial value to be used instead of values established by the marketplace. NYMEX; Cushing, Oklahoma; simply do not respond to the daily market dynamics in the Rockies such as increased oil supply,

refinery alterations or pipeline interruptions. The use of a formula fails to recognize the viability of the lease market, and in particular, the value at the lease in the Rocky Mountain region. The proposal is contrary to, and is a radical departure from, the long-standing policy of the department to allow the actual marketplace in the field or area and production to establish value. As late as 1988 MMS itself reaffirmed this policy when it published oil and gas valuation regulations in the Federal Register.

RMOGA was part of the coalition of six trade associations that jointly filed a Freedom of Information Act Request for all of the documents that led MMS to propose this rule. After reviewing the information returned as the result of the FOIA request, we are underwhelmed. We were eager to examine the responses to the wide variety of questions raised, but were disappointed to receive no responses to virtually all elements of the request. While there was a mass of information provided, there was little core information upon which to base the proposed rule. Specifically:

- * Neither data nor analysis were provided.
- * Flip charts and slide presentations were provided, but details on how the expert consultants reached their conclusions were absent.

Clearly, industry and MMS alike need much more time to evaluate and analyze all of the available data in order for MMS to avoid plunging ahead and implementing a seriously flawed rule.

COMMON SENSE SOLUTION:

Federal Royalty-In-Kind Program:

Simply mandate that all federal lessees deliver the appropriate percentage of crude oil at or near the lease to the federal government for its disposal. The federal government either becomes a player, or contracts with an aggregator/marketer to sell its share of the product at market prices. This would eliminate many of the regulatory/reporting requirements which currently cost the private sector billions of dollars annually. There is a real-life, real-time example already in operation. Alberta Oil takes all of the Province's product in kind and markets it through aggregator/marketers. The Province's staff markets all of the product eliminating the need for thousands of employees and millions of forms. This also assures the Province it is receiving the prevailing price for its oil, thus protecting the Treasury and the taxpayers. The Province of Alberta understands the oil and gas market and has accepted both the risks and the rewards, and it is paying off handsomely for the Canadian taxpayer.

State Royalty-In-Kind Program:

The RIK Program should also allow the states to take their fair share and market it themselves. This solution would also assure MMS receives full market value for its share of the petroleum resources of the United States. It would also alleviate concerns of some western states who wish to enter into such a program for their share of the oil.

ALTERNATIVES:

Arms-Length Transactions: Despite claims to the contrary, there is a viable and active market for oil at the wellhead and at the lease level. There is no need to restrict arm's-length transactions at the well-head or the lease. MMS has abandoned its long-standing support of the use of gross proceeds as the very best indicator of the value of oil between willing sellers and willing buyers who have opposing economic interests. Through these regulations MMS has virtually eliminated the use of the arm's-length transaction.

Comparable Sales: Again, there is ample evidence in the private sector that MMS can determine whether the oil valuations reported to it by companies engaged in the business of buying and selling oil represent the true market price. MMS has the ability to look at comparable sales to determine true market price and the appropriateness of the payment. If there is a dispute, the company must demonstrate how it arrived at its figures. This gives MMS and the company the ability to negotiate.

Information Management: MMS already has adequate information to manage its program. However, industry believes that MMS is hampered by a lack of technical expertise and the ability to utilize the information it already has. With additional software programs to utilize the plethora of information already being assembled, MMS could assure itself that the pricing of oil and the payment of royalties continues to be in the best interests of the taxpayers of the United States.

Oil Pricing: The use of a single index methodology as proposed by MMS, belies the fact that there is no "one" price for oil. There are many pricing variables for which NYMEX will never be able to adjust. Spot prices, long term contracts, cost adjustments for transportation, cost adjustments for quality, for quality banks, for location all create a "basket" of prices rather than a single price as suggested by pegging it to NYMEX.

INDUSTRY/MMS PARTNERSHIP

RMOGA endorses the creation of a partnership between the private sector and MMS. The only way this can happen, however, is for MMS to withdraw this rule and accept the following assumptions:

- * There is no one price for oil.
- * The arm's-length transaction is the best way to value gross proceeds from the sale of oil at the lease.
- * Comparable sales can be used to true up reports when arm's-length transactions are absent.
- * MMS must be willing to take both the risks and the rewards that the private sector faces in order to do its job properly.

- * MMS must become a partner in the oil business using Royalty In Kind to assist in determining oil valuation.
- * Set a 5 to 10 percent goal for RIK at or near the lease, with a geographic spread throughout the producing states and fields.
- * Utilize the expertise the Province of Alberta has developed to assist MMS in the transformation. The oil and gas industry is willing to assist MMS in establishing a RIK program.
- * Utilize the MMS price for its arm's-length transactions plus applicable variables to ensure that the private sector meets its responsibility.
- * Utilize the RIK program at or near the lease to reduce paperwork, forms and reports.
- * Create a joint MMS/Industry dispute-resolution process to quickly and fairly resolve differences.
- * MMS must revitalize its information-handling capabilities to reflect the scope of information currently gathered.

AREAS OF CONCERN:

Simplicity and Fairness:

If simplicity is one of the goals of this proposed rule, MMS has failed. The proposed solution is far more time consuming, more costly and more report intensive than the current system. This proposal also penalizes many segments of the oil industry with added regulation and financial burdens.

Equity:

The proposed rule tilts the playing field severely toward the federal government at the expense of state government and oil producers. If MMS is going to be a player in the marketing of oil and gas, it must assume the same risks as the private sector to achieve the same rewards. The current proposal insulates MMS from any risk while maximizing the potential rewards. While there is little doubt MMS can manufacture a valuation system through which it remains financially whole, the same cannot be said for states or producers.

Interim Rule:

RMOGA strongly opposes the suggestion that an "interim rule" be issued. The alleged benefit of an interim rule would afford MMS flexibility to revise the rule after the first year of

implementation without a new rulemaking. This approach is unacceptable. It is important for MMS and industry to arrive at a mutually acceptable solution. RMOGA strongly believes imposition of an "interim rule" would only serve to worsen an already disagreeable situation.

PROPOSED VALUATION METHODOLOGY:

The severe limits placed on the use of arm's-length transactions are highly problematic. RMOGA strongly disagrees with the contention of MMS and its consultants that there is no active market for oil at the wellhead. To the contrary, there is a viable market at the wellhead and valuation needs to be geared toward pricing of oil in the real world, not an artificial and distant point. The vast majority of Federal oil royalty sales would likely be subject to a new methodology in which royalty value is linked either to NYMEX futures prices for WTI at Cushing, Oklahoma, or the Alaska North Slope (ANS) spot price, depending on the location of production. Such transactions include exchange agreements, reciprocal buy/sell agreements, non-arm's-length transactions, and sales to an affiliated refiner, and even arm's-length transactions if the Federal lessee purchased any oil from an non-affiliate during the prior two years.

Oil values established by arm's-length transactions are proven true and accurate measures of market value and must remain the standard. In the absence of an arm's-length transaction, MMS has a sufficient database to determine values by using comparable sales of like quality crudes in the area. RMOGA does not understand MMS' unwillingness to recognize and utilize such a valuable tool that is so readily available.

COST IMPLICATIONS:

According to independent analysis and examination of the MMS proposal, the data presented in support of the minimal cost of reporting are seriously flawed. Barents Group LLC points out that MMS provides no support for its three key assumptions of 64 filings (on average) per royalty payor, 15 minutes of effort per filing, and \$25 per hour of labor effort. Again, according to Barents Group, MMS does not take into account the practical difficulties of obtaining required information that is not readily available, especially sulfur content and actual transportation costs. In particular, MMS assumes that all of the information required to fill out each Form MMS-4415 is available and systematically maintained by lessees/payors in the normal course of business. According to RMOGA members, this is not the case. Provision of such information would impose additional expenses for operators for oil sampling, testing, reporting, recordkeeping and filing, and additional manpower to do the work.

The hourly cost assumed by MMS is significantly lower than the compensation assumed for its own employees who would analyze the data submitted. In supporting documents, MMS assumed that GS-9 employees would collect, sort and file the documents at a cost of approximately \$29 per hour and that GS-12 analysts would analyze and publish the data at a cost of approximately \$43 per hour. Lessees would need to employ skilled professional analysts capable of understanding the various contracts and other sources from which information must be extracted

in completing Form MMS-4415. Surely, such an analyst in the private sector would not cost less than a GS-9 who collects and files federal documents.

One of the companies surveyed reported the average salary, with benefits, of an appropriately skilled professional would amount to at least \$36 per hour. This figure does not include the assessment of overhead costs to this effort, nor does it include a calculation of the total number of individuals needed to comply with the proposed federal directive.

Additionally, MMS apparently made no attempt to quantify the cost of the filing of the three current forms. It is foreseeable that the proposed Form MMS-4415 could have substantial implications on the information required on Forms MMS-2014 and MMS-3160, and the Oil and Gas Operations Report. Changes to these filings triggered by the new requirements would result in additional costs to both lessees and MMS.

CONCLUSION:

Implementation of the proposed rule on oil valuation would be unreasonable. A great deal of additional inquiry and a wide range of proposed alternatives are needed to avoid unnecessary cost increases to the petroleum industry and to the federal government.

MMS has made a number of assumptions on which the proposed rule is based.

- MMS wrongly assumes there is an "average national price" for all oil produced from all wells on federal lands both onshore and offshore U.S.
- MMS wrongly assumes there are no markets close to the wellhead. There are vigorous wellhead markets consisting of willing buyers and willing sellers at or near these leases.
- MMS wrongly assumes there is one single market price (value) for oil, rather than a range of prices (value).
- MMS appears to have based its assumptions on allegations and litigation which has yet to be resolved rather than upon sound data, evidence or analysis.

MMS has long held that gross proceeds constitute market value and arms-length contracts are determined by market forces and thus represent the best measure of market value. However, this proposed rule reduces eight years of long-standing principles to rubble by artificially relying on an index price for market value. This proposal would dramatically alter the way oil and gas companies conduct their business as they attempt to comply with these new mandates. Not only would it force companies to hire much more staff to handle the paperwork the federal government is asking for, but the proposed rule would force the federal government to hire hundreds, perhaps even thousands of new personnel to deal with the requirements of the new rule. RMOGA strongly urges the MMS to withdraw its proposed rule and bring industry to the table for meaningful discussions and an analysis of the perceived problem before promulgating a new rule that would significantly change federal requirements.

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Another recommendation is to hold open public meetings on the subject with MMS consultants in attendance. The oil and gas industry must have the opportunity to question these experts about their findings and the data they used to arrive at the conclusions found in the initial proposal brought forward by MMS. New meetings with participation by the MMS consultants would add essential information and interpretations to the process. Withdrawing the proposed rule would give MMS time to do the job correctly.

The one answer that levels the playing field completely is for MMS to take its royalty in kind at or near the lease. RMOGA encourages MMS to recognize the viability of the marketplace and take at least a percentage of its oil in-kind, while allowing states to adopt similar programs. This step offers the government the same opportunities as industry and removes the need for regulatory minutia. MMS would reap both the rewards and assume the risks of the marketplace as is done by the private sector.

In short, while not perfect, the current regulatory system used to value production at the wellhead, as established by willing buyers and sellers with opposite economic interests, continues to adequately serve both the regulators and the regulated because the 1988 rules are fundamentally sound. MMS and industry can work to improve and streamline the current system. Draconian measures to fix that which doesn't need to be fixed are unnecessary.

Enclosed is the report of Barents Group. This report discusses many of the fundamental conceptual and analytical flaws in the proposed rule. RMOGA is in full support of its analysis and conclusions.

Again, RMOGA appreciates the opportunity to provide you with our views and comments. Please do not hesitate to contact me if you have any questions or would like to discuss these comments in greater detail.

Sincerely,



Cliff Dodge
Executive Vice President
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Enc. Barents Group Analysis
Map - U.S. Crude Oil Activities



**ANALYSIS OF THE DEPARTMENT OF INTERIOR, MINERALS
MANAGEMENT SERVICE PROPOSED RULE ESTABLISHING
OIL VALUE FOR ROYALTY DUE ON FEDERAL LEASES
AND ON SALES OF FEDERAL ROYALTY OIL**

May 28, 1997

KPMG LLP

**ANALYSIS OF THE DEPARTMENT OF INTERIOR, MINERALS
MANAGEMENT SERVICE PROPOSED RULE ESTABLISHING
OIL VALUE FOR ROYALTY DUE ON FEDERAL LEASES
AND ON SALES OF FEDERAL ROYALTY OIL**

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May 28, 1997

PREFACE

Barents Group LLC, a wholly owned subsidiary of KPMG Peat Marwick LLP, was retained by a group of companies having significant crude oil production on Federal lands, to assist in analyzing the Department of Interior, Minerals Management Service (MMS) proposed rule establishing a new method for valuing oil for royalties due on Federal leases, and on the sale of Federal royalty oil (62 F.R. 3742, published January 24, 1997). These companies are interested in and affected by the MMS proposal.

For the purposes of this report, we have utilized certain terminology defined by MMS in its proposed rule, though we understand that these terms are not necessarily recognized or commonly used in the oil industry. The term "index pricing point" refers to the "physical location where an index price is established" – specifically, Cushing, Oklahoma, for the NYMEX futures price, and San Francisco and Los Angeles for the Alaska North Slope spot price. The term "market center" is defined by MMS as "a major destination point for crude oil sales, refining, or transshipment" – for example, St. James, Louisiana, and Guernsey, Wyoming. MMS has initially defined seven locations as market centers, including the "index pricing points." The term "aggregation point" is defined by MMS as "a central point where production from various leases or fields is aggregated for shipment to market centers or refineries – including, but not limited to, blending and storage facilities and connections where pipelines join." MMS proposes to publish periodically the aggregation points associated with each market center.

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**ANALYSIS OF THE DEPARTMENT OF INTERIOR, MINERALS
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EXECUTIVE SUMMARY

Barents Group LLC, a subsidiary of KPMG Peat Marwick LLP, was retained by a group of companies having significant crude oil production on Federal lands, to assist in analyzing the Department of Interior, Minerals Management Service (MMS) proposed rule establishing oil value for royalty due on Federal leases, and on the sale of Federal royalty oil.

The conclusion of our analysis is that the proposed valuation method based on New York Mercantile Exchange (NYMEX) futures prices and Alaska North Slope (ANS) California spot prices is fundamentally and fatally flawed. It fails to satisfy the basic objective of measuring the value of crude oil at the lease, and it imposes unnecessary costs and risks on Federal lessees and the Federal government. MMS has performed no tests of its proposed rule to determine whether it would yield fair and reasonable estimates of crude oil value at the lease. Furthermore, as discussed in our earlier study filed with the Office of Management and Budget, the proposed rule would impose unnecessarily large administrative costs on lessees. Consequently, the proposed rule should be withdrawn and its underlying valuation method rejected.

We have classified the problems with the proposed oil valuation method into three general categories: (1) problems with basing value at the lease on NYMEX futures prices in all cases for non-California and non-Alaska crude, (2) problems with MMS' proposed adjustments for location, quality and transportation costs, and (3) general problems with the rule.

Problems with basing value at the lease on NYMEX futures prices: There are two key problems with MMS' choice of the NYMEX light sweet crude futures price as the starting point for royalty valuations. First, MMS is exactly backwards in concluding that oil markets are "driven" by the NYMEX market. Second, the same factors that MMS claims invalidate the use of NYMEX for California and Alaska crude also invalidate it for most other areas of the country and for grades of crude that are significantly different from West Texas Intermediate.

Problems with MMS' proposed adjustments for location, quality and transportation costs: MMS' proposed adjustments to account for differences in value between the light, sweet types of crude deliverable against a NYMEX futures contract at Cushing, Oklahoma, and the many different grades and qualities of crude actually produced and sold at the lease by individual lessees have many problems, and in most cases will not lead to accurate valuation

of oil at the lease. The proposed valuation method does not take into account the volatile nature of market oil price differentials between different locations and different grades of crude. The many local oil markets in the U.S. do not move in lock-step with each other because of the influence of local supply and demand factors. In addition, MMS incorrectly believes that it will be able to glean an adequate amount of information about "location/quality" price differentials from the information proposed to be collected from lessees. Also, the proposed allowance for transportation costs will result in a general upward bias in values assessed at the lease for royalty purposes.

The underlying assumptions implicit in MMS' proposed valuation method have not been empirically tested, and the data and analysis presented in this report indicate that they are false. The key unsupported assumption made by MMS about the oil industry is that price differences between widely dispersed markets and leases can in all cases be fairly represented by a combination of monthly average spot price differentials, annual averages of reported exchange agreement price differentials, and a measure of transportation costs. The basic fact that spot price differentials between different locations and qualities of oil are volatile and ever-changing indicates that this assumption is likely to prove false in most cases.

General problems with the rule: In addition to the specific problems that would lead to incorrect assessments of royalty values, MMS' proposed rule has other more general problems. Among these, it would impose inefficiencies and distortions on the oil market, impose unnecessary risks on lessees, and treat lessees differently based on characteristics that are irrelevant to fair oil valuation. In addition, it incorrectly assumes that all lessees will have access to all of the information required to comply with the proposed rule, and it faces serious problems of statistical accuracy.

Finally, we discuss an existing approach to the issue of valuing oil for royalty purposes that, unlike the proposed rule, would satisfy the tests of a well-designed royalty valuation system and would more accurately capture the value of oil at the lease when it is disposed of on the market: establishment of an effective royalty-in-kind program. The strengths and weaknesses of such an approach should be carefully evaluated by MMS. MMS should then work with industry to pilot test such a program and, if appropriate following a testing and refinement phase, MMS should propose a new rule.

We conclude that MMS has failed to demonstrate that its proposed valuation method will result in fair and reasonable estimates of crude oil value at the lease, and there are many sound reasons to conclude that it will not. The proposed rule would impose large new reporting and compliance burdens on lessees and may distort investment and production decisions. The proposed rule has not been carefully developed and has not been tested to assure either that it could be successfully implemented or that it would produce accurate results. The rule should be withdrawn, and a new approach should be carefully developed and tested before it is proposed for consideration.

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I. INTRODUCTION

A new rule proposed by the Department of Interior, Minerals Management Service (MMS) establishing oil value for royalties due on crude oil produced and sold from Federal leases is fatally flawed, because it is not capable of accurately measuring value at the lease for most cases.¹ This report discusses the numerous problems with the proposed valuation method that lead to this conclusion. Following our discussion of these problems, we discuss the characteristics of a good royalty system and discuss an existing valuation system that possesses these characteristics.

Our previous report,² filed with the Office of Management and Budget, Office of Information and Regulatory Affairs on March 25, 1997, focused on, among other things, the administrative burdens that would be imposed by the proposed rule. By contrast, the present report focuses on problems with MMS' proposed valuation method and discusses an approach to valuing oil for royalty purposes that is more reasonable and workable, and that will result in royalty payments that are based on the actual market value of crude oil at the lease.

Section II of this report, including the attached map, discusses the geographical diversity and the complexity of U.S. crude oil markets. Section III discusses the serious problems with MMS' proposed valuation rule, including problems with basing value for most cases on NYMEX futures prices or ANS spot prices; problems with the proposed adjustment system for location and quality differences and transportation costs; and more general problems. Section IV discusses the characteristics of a good royalty system and why MMS' proposed rule does not possess these characteristics. It then discusses an existing approach to valuing oil for royalty purposes that would be more fair and workable than MMS' proposal: establishment of a well-designed royalty-in-kind program. Section V summarizes our main conclusions.

¹ All references to the proposed rule in this report, and page numbers shown in brackets, refer to 30 CFR Parts 206 and 208 as published in Federal Register, January 24, 1997, Volume 62, Number 16.

² "Preliminary Analysis of the Department of Interior, Minerals Management Service Proposed Rule Establishing Oil Value for Royalty Due on Federal Leases and on Sales of Federal Royalty Oil," March 25, 1997.

II. GEOGRAPHICAL DIVERSITY AND COMPLEXITY OF MARKET

The U.S. crude oil industry is highly complex and dynamic with new market relationships being created and old arrangements being replaced in response to changing economic conditions. The creation of NYMEX itself less than 15 years ago is one such response. The rapid growth of trading activities and other "middle market" functions conducted by major integrated companies, independent traders and marketers, independent producers, and independent refiners is another such response.

The Nation's crude oil exploration, production, transportation, refining, and marketing industry represents an enormous investment in infrastructure and employs a large, technically-sophisticated labor force to maximize the economically efficient recovery and use of crude oil and associated products. Companies quickly respond to both market forces and government policy changes by shifting investment dollars, employment opportunities, and other resources to their best use. As illustrated on the attached map, refineries and pipelines are strategically located so that crude oil can be efficiently moved from producing areas to population centers where refined products meet customer demands.

As shown on the attached map, there are numerous large and small, geographically-diverse crude oil properties currently producing 6.4 million barrels per day, linked to at least 159 refinery locations through a complex and integrated system of pipeline, barge, rail, and truck transportation systems.³ The exploration and production sector alone employs over 300,000 people. There were about 8,000 companies reporting oil and/or natural gas production in the U.S. in 1992. Of these 8000, 427 were publicly-traded companies, and 327 of these publicly-traded companies reported that oil and gas operations were their primary industry.⁴ Small independent producers account for almost all the remaining companies.

To implement the proposed rule, MMS has selected 320 aggregation points, seven market centers, and two "index pricing points" to serve as the benchmarks for establishing the royalty value of oil produced from Federal lands. One "index pricing point" is the NYMEX light, sweet crude futures price at Cushing, Oklahoma, and the other is an Alaska North Slope (ANS) spot market price in either San Francisco or Los Angeles. MMS proposes to adjust these "index prices" based on spot market prices reported in MMS-approved publications. Published spot prices are currently available for eight locations from Platt's, Reuters,

³ Data sources used in developing the map include: (a) 1997 refinery input and production capacity reported by Energy Information Administration (EIA) in "Biennial Refinery Report," from EIA's Internet site: www.eia.doe.gov/oil_gas/psa/refcap.html; (b) additional refinery data from Worldwide Refining & Gas Processing Directory, PennWell Publishing Company, 1997; (c) certain refinery data verified by Gardere & Wynne technical staff; (d) PennWell's Crude Oil Pipelines of the United States and Canada, Fourth Edition; (e) crude oil field data purchased from PennWell; (f) data on Express Pipeline from TransCanada Corporation's Internet site: www.transcanada.com; (g) index pricing point, aggregation point, and market center locations from the proposed rule and subsequent MMS release; (h) spot market pricing locations from Platt's, Reuters, Bloombergs, and Telerate.

⁴ Oil and Gas Development in the United States in the Early 1990's: An Expanded Role for Independent Producers, Energy Information Administration, October 1995.

Bloomberg and Telerate. While MMS' proposed structure is complex, it does not begin to capture the inherent complexity of the Nation's petroleum sector.

MMS' proposed rule assumes that all prices can be determined by reference to either a NYMEX- or ANS-based value that is first netted back to the market centers, then netted back to the aggregation points, and finally, after adjusting for a measure of transportation costs, netted back to the wellhead. Under the proposed rule, NYMEX prices and spot market prices are averaged over the period of a month, while oil price differentials are averaged over the prior year. In contrast, crude oil purchasers use crude oil price bulletins as a basis for purchasing crude from many different locations, and the prices in these bulletins may change on a daily basis.

The proposed rule would send the wrong pricing signal to the market place. While MMS has identified "more certainty" as a primary goal in proposing the rule, it sacrifices accurate pricing at the lease. U.S. markets, while generally highly efficient, do not lend themselves to simplicity and certainty. One need only look at the volatility in day-to-day crude oil pricing to understand that the certainty MMS hopes to achieve is not realistically attainable.⁵ Even within the major integrated companies, who closely monitor crude oil pricing and supply developments themselves, no one fully understands or can predict how the markets will change.

Federal Government deregulation of oil prices over the 1979-81 period was implemented precisely to remove economic distortions caused by a well-intentioned attempt to provide certainty in crude oil pricing. What was conceived of as a relatively simple system – also based upon an indexing approach – evolved into a highly complex regulatory structure that ultimately included targeted biases to encourage companies and activities deemed to be worthy (e.g., small refiners, new oil exploration, enhanced recovery techniques, heavy oil production, and stripper well production). As a result of government intervention in the marketplace, investors were encouraged to shift funds in ways that ultimately resulted in a massive waste of resources during the late 1970s and early 1980s.

While the proposed rule does not yet go nearly so far as the old crude oil price regulations, market distortions will nevertheless result. These distortions will worsen as MMS will very likely be forced to expand the rule over time in response to changing conditions. MMS will inevitably find the current version of the proposed rule does not work in most situations. In response, the rule will need to become increasingly complex in an attempt to avoid the resulting changes in investment behavior that it will force to occur. For example, pricing discrimination will disadvantage companies selling crude oil to affiliates under the proposed rule because a share of the added value resulting from activities that occur off of the lease will be subject to royalty payments in many cases. Under the proposed rule, government-induced competitive pressures may force these companies to instead sell their crude at the lease to third party middle-market companies performing trading, shipping, aggregation, storage, and blending functions. This would avoid having a royalty imposed on the cost of

⁵ See Figures 2-10 and the accompanying discussion in Section III below.

the activity when it is conducted within the producing company, even though such an arrangement might otherwise be more economically efficient. As these kinds of situations become more apparent, MMS may decide that there is a need to redesign the rule in an attempt to capture a share of that revenue. As happened with the old crude oil pricing regulations, the fundamental flaws in the approach will very likely lead to increasing complexity and greater marketplace distortions as MMS seeks to keep the system operational.

Price distortions under the proposed rule will arise in numerous ways. Generally, NYMEX and ANS prices do not accurately reflect the price level, the degree of change, and in some cases, even the direction of the price change in local markets. Reported spot market prices to be used under the proposed valuation method for adjusting NYMEX and ANS prices are derived from an undocumented and changing method with no quality control other than that provided by individual reporters, no consistent measurement techniques, and no reporting of volumes traded at the reported prices. Oil price differentials, even if they were accurately collected, analyzed and reported by MMS, would reflect relationships from the prior year that are, in many cases, no longer valid. Transportation cost adjustments will not be consistent across producers depending upon whether they have an interest in the crude oil pipeline. All these price distortions will add uncertainty and inconsistency to royalty valuation and, in turn, will lead to similar distortions in investment choices.

The attached map provides a good illustration of these problems. The Wyoming inset shows a market that in 1995 accounted for approximately 15 percent of the onshore non-Indian lands production. It is largely not linked to the rest of the country. Mr. Jack Bloomstrom of Eighty Eight Oil Company provided a useful description of the Wyoming market at the April 15, 1997 MMS hearing in Denver.⁶ He pointed out that the Wyoming sour crude market price bears little relationship to the West Texas Sour (WTS) price at Midland, yet the proposed rule suggested that Midland should be used as a market center for valuing Wyoming sour. WTS is physically dissimilar from Wyoming sour crudes and trades in a geographically distinct market subject to different supply and demand factors. Mr. Hugh Schaeffer, representing the Independent Petroleum Association of Mountain States (IPAMS), made a similar point:

Most current Rocky Mountain production is produced by non-integrated independent producers who sell oil into a buyers' market where prices are established by regional refiners with no economic ties to Cushing, Oklahoma, prices. Furthermore, the prices for Rocky Mountain crudes are influenced primarily by regional product prices based on what refiners can get for refined products. Both Rocky Mountain crude and product prices move independently from prices in other regions.⁷

⁶ See transcript from Minerals Management Service Oil Valuation Proposed Rulemaking, Denver, Colorado, April 15, 1997, pp. 69-79.

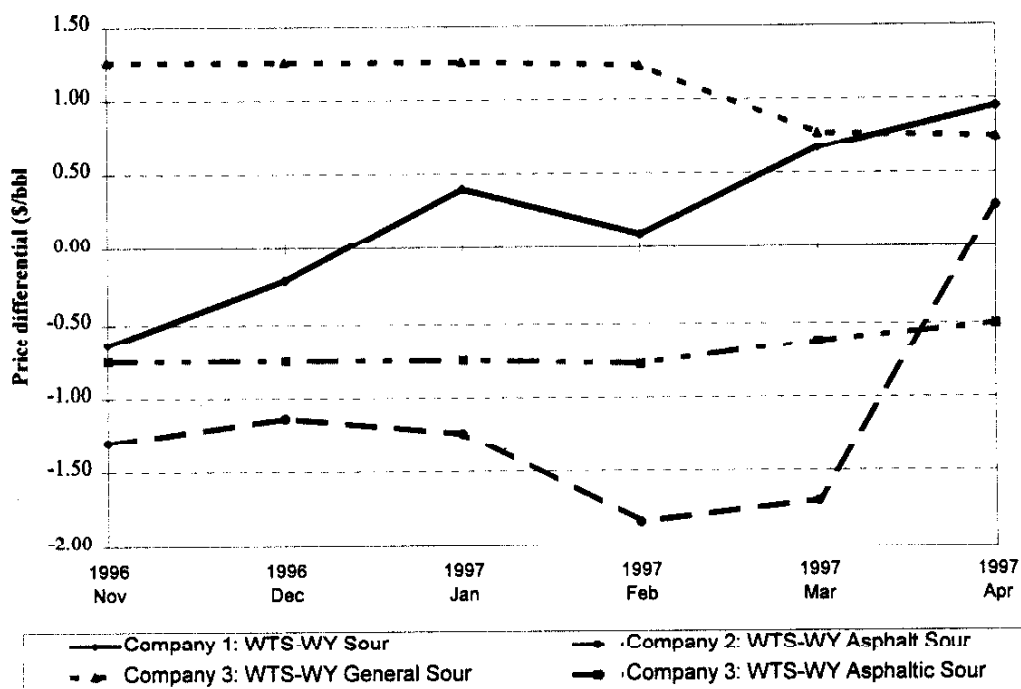
⁷ Denver transcript, p. 37.

This changing pricing relationship is illustrated in Figure 1, which compares posted prices of three significant purchasers for West Texas and Wyoming sour crudes over the last 6 months.⁸ Each company represented in Figure 1 posted prices for WTI, WTS, and at least one Wyoming sour crude. During this period, postings of Company 1 went from a -\$0.64 differential from WTS for "Wyoming Sour" in November 1996 to a +\$0.95 differential in April 1997. Company 2 went from a differential of -\$1.30 to +\$0.28 for "Wyoming Asphalt Sour", and Company 3, which posted for two Wyoming sour crudes went from a differential of +\$1.25 to +\$0.75 for "Wyoming General Sour" and from -\$0.75 to -\$0.50 for "Wyoming Asphaltic Sour." It is not clear whether or how the recent opening of the Express Pipeline⁹ in this area influenced the posted price for these sour crudes. What these prices do illustrate is that any system that attempts to link WTS prices to Wyoming sour prices or that bases oil-price differentials on data that may be a year out of date will completely fail to reflect the marketplace.

⁸ Even though MMS believes the "true" market price level is not accurately reflected by posted prices, the changes in posted prices over time very likely reflect changes in local market conditions.

⁹ The Express Pipeline is a 785-mile, 24-inch pipeline between Hardisty, Alberta, and Casper, Wyoming, with an initial capacity of 172,000 barrels per day. TransCanada, in an October 28, 1996 press release, reported that 85 percent of capacity had already been contracted for over terms of 5 to 15 years. In a subsequent teleconference with investment analysts, the company reported that the Platt Pipeline with which the Express Pipeline connects, will increase its capacity from 110,000 to 115,000 barrels per day in April to 150,000 barrels per day in July. (See reported remarks posted on TransCanada's Internet site (www.trnascanada.com): 1996 Fourth Quarter Results Teleconference, Bob Hodgins, Senior Vice President and Chief Financial Officer, spoke with investment analysts and the media at a January 27, 1997 teleconference.)

Figure 1
Comparison Of Posted Price Differentials Between West Texas Sour
and Wyoming Sour (WTS Minus WY Sour)
 (monthly average postings)



New pipelines occasionally open, and the flow direction of existing pipelines is occasionally reversed due to changing market conditions. New investments are made in refinery capacity and processing capabilities, and refineries are shut down for maintenance. New oil fields go into production, production from existing fields changes due to new investment, field production declines, and fields are abandoned. Each of these events will significantly affect prices in local markets in ways that cannot be accurately captured by the proposed rule.

MMS may try to keep up with some marketplace changes by adding and deleting aggregation points, market centers, and spot market publications. At this time, MMS has not specified how they will do this or what the criteria will be for making such changes. This means that a producer could find an investment made under one royalty valuation scheme will subsequently be subject to another valuation scheme as the relevant locations and publications change. The very flexibility MMS wants and needs if it is going to try to keep up with the market will, in fact, create additional uncertainty and costs for lessees.

Some might argue that Wyoming sour crudes represent an extreme example of the problems created by the new rule and that the valuation of the bulk of the Nation's crude will not be similarly affected. While Wyoming may be more significantly affected than some other areas, it is indicative of mispricing that will occur in most domestic markets. It is only a

question of the degree of mispricing, not of whether it will occur. Value mismeasurement will vary from location to location and from month to month. Some producers will experience valuation benefits over certain periods, while others will be economically harmed.

California producers will face similar misvaluation problems. As discussed in testimony presented in Denver by Dan Martinez of Monterey Resources, ANS and San Joaquin crudes have a "completely different set of refining values and a different set of fundamentals that influence the price."¹⁰ He went on to cite specific examples showing how differentials ranged from \$2.14 to \$5.78 per barrel over the past few years. Changes in local market conditions lead to such variations, and these differentials cannot be adequately captured by the proposed rule. Michael Stahl of ARCO Western Energy made similar comments concerning San Joaquin prices and specifically linked them to mid-continent prices less a netback for transportation.¹¹

As discussed in our previous report, a system that works "on average" may be acceptable for MMS, and even for large states and possibly even some very large companies, but it is important to understand what is going on. For any system that relies on average prices to work, it will need to incorporate other factors in addition to a lease price. For such a rule to work, it would need to provide deductions for basis risk sufficient to make a producer whole on average. Some producers may even be willing to accept a small shortfall to avoid the controversy and litigation expense associated with MMS audits. However, this creates distributional problems for small producers who will be unable to benefit from such price averaging. Indeed, the only way for the smaller producer to find protection from the marketplace distortions caused by the MMS method may be to begin trading on NYMEX. Even if this were practical, which many independents will say it is not, it is costly, it is a different business from their core business of producing of crude oil, and it is fundamentally unfair.

III. PROBLEMS WITH MMS' PROPOSED VALUATION METHOD

MMS agrees that royalties should be paid based on the value of oil at the lease/wellhead. This principle is embodied in the language of the proposed rule.¹² So the fundamental question regarding the proposed rulemaking is, *How should the market value of crude oil at the lease be measured?* MMS has proposed a NYMEX- and ANS-based valuation method to replace the currently applicable 1988 rule. The 1988 rule is based on the concept of gross proceeds accruing to the lessee and arm's-length sales of comparables. As we discuss below,

¹⁰ Denver transcript, pp. 26-30.

¹¹ Denver transcript, pp. 31-35.

¹² MMS' discussion of the proposed rule indicates numerous times that its proposed valuation method is intended to derive a value for crude oil at the lease. For example, "[t]he allowable adjustments and deductions would reflect the location/quality differentials and transportation costs associated with value differences between oil produced at the lease and oil at the index pricing point." 62 Fed. Reg. 3747.

MMS' proposed valuation method is not capable of accurately measuring value at the lease for most cases, for a number of reasons.

PROBLEMS WITH BASING VALUE AT THE LEASE ON NYMEX PRICES

There are two important problems with MMS' choice of the NYMEX light sweet crude futures price as the starting point for royalty valuations on all Federal leases.¹³ First, MMS is incorrect in concluding that oil markets are "driven" by the NYMEX market based on its observation that the NYMEX price is an important indicator of market prices. Second, the same factors that invalidate the use of NYMEX for California and Alaska crude also invalidate it for most other areas of the country and types of crude, except perhaps for West Texas Intermediate (WTI) at or near Cushing, OK.

1. There is no sense to MMS' belief that all oil markets are necessarily "driven" by the NYMEX market.

MMS states that it "believes that today's oil marketing is driven largely by the NYMEX market." (62 Fed. Reg. 3746) This is as ridiculous as stating that the values of stocks included in the S&P 500 index are driven largely by the S&P 500 futures market, or that the price of GM stock is driven largely by the market for options on GM stock, or that the fundamental market for any commodity or financial claim is driven by the market for some derivative claim. Futures prices are now and always have been *derivative*: they represent a claim on a quantity of oil to be delivered at a specified future date and their value, thus, is *derived from* the expected future value of that oil which, in turn, is driven by fundamental market forces – namely supply and demand. On a historical basis, the cash markets for oil and other commodities and financial instruments clearly preceded futures markets and forward contracts. If futures markets disappeared today, while people wanting to hedge would be inconvenienced and the market would be made less efficient, the cash commodity market would continue on. The converse does not hold: if the cash commodity market for oil disappeared today, the futures market would have no function and would cease to exist. To say that a future's, or any derivative's price drives a commodity market is to get things exactly backward. This remains true even if some market participants use NYMEX futures prices as a basis for pricing decisions. The NYMEX price may be a useful summary of general market conditions, but it does not drive the market in any economically meaningful sense.

¹³ The proposed rule bases royalty value for non-arm's-length transactions on NYMEX for production outside of California and Alaska, and the ANS California spot price for production in California and Alaska.

2. *The same factors that MMS claims invalidate the use of NYMEX for California and Alaska crude also invalidate it for most other areas of the country and for types of crude other than WTI.*

MMS has chosen to use a different pricing basis for California and Alaska production based on the following reasoning.

... largely because of the geographical isolation of these markets. The distance from the mid-continent markets would lead to great difficulties in making meaningful adjustments from the NYMEX price. MMS believes that a more localized market indicator would better represent royalty value.¹⁴

However, the same reasoning invalidates the use of NYMEX prices for valuing oil in many other locations, such as those produced in Eastern and Rocky Mountain states, which are quite distinct from the crudes traded in the Cushing market and respond to distinct local supply and demand factors. Just as the volatility of price differentials between WTI and ANS crudes undermines the use of NYMEX as a basis for valuing West-coast crudes, so the volatility of price differentials between WTI and (for example) Wyoming Sweet at Guernsey and Light Louisiana Sweet at St. James invalidates the use of NYMEX for these cases (this volatility is shown in the sections below). The difference between the West coast and other markets in terms of their "geographical isolation" from Cushing is a matter of degree rather than of substance. MMS is being inconsistent in using NYMEX for some areas of the country and not others, especially given that MMS has not demonstrated that the use of NYMEX futures prices leads to accurate valuations for oil outside of California and Alaska. Indeed, the differentials between the ANS spot price and spot prices of other California crudes tend to be large and highly variable (as shown later in this report), leading one to question the validity of the ANS spot price as a basis for valuing other California crude streams.

PROBLEMS WITH MMS' ADJUSTMENT METHOD FOR LOCATION, QUALITY AND TRANSPORTATION COSTS

MMS' adjustment method to account for differences in value between the light, sweet crude deliverable at Cushing, Oklahoma, against a NYMEX futures contract and the many kinds of crude actually produced and sold at individual leases has many problems and will not lead to accurate valuation of oil at the lease. The proposed valuation method does not take into account the volatile nature of market oil price differentials between different locations and different grades of crude. The many local oil markets in the U.S. do not move in lock-step with each other because of the influence of local supply and demand factors. In addition, MMS incorrectly believes that it will be able to glean an adequate amount of information about "location/quality" price differentials from the information proposed to be collected on buy/sell and exchange transactions. Also, the proposed allowance for transportation costs

¹⁴ 62 Fed. Reg. 3745.

will result in a general upward bias in values assessed at the lease for royalty purposes. Overall, MMS has failed to demonstrate that its proposed method will result in fair and reasonable estimates of crude oil value at the lease, and there are many sound reasons to conclude that it will not. We discuss these issues in detail in the following.

1. MMS' method of making adjustments to a NYMEX futures price to arrive at a value at the lease is an incongruous combination of actual and average prices that is incapable of producing an accurate or fair market value for crude oil in most cases.

The MMS method is a hybrid of actuals and averages: "Actual" transportation cost (as defined by MMS) is allowed either up to an aggregation point or to a refinery (if the oil does not pass through an aggregation point), then averages of other persons' "location/quality differentials" and/or market-center-based prices are used thereafter (unless a lessee has actual differentials from its own arm's-length exchange agreements). The combination of actuals and averages results in incongruities rather than real values received for oil at the lease: the NYMEX and spot price parts are allowed to fluctuate month to month, location/quality differentials can fluctuate only year to year, and actual value at the lease can fluctuate from day to day.

The graphs below illustrate the volatility over time in the differentials between the monthly average WTI spot price and monthly average spot prices at other locations and of other qualities, January 1984 to April 1997.¹⁵ As shown in Figure 2, the average difference between spot market prices at Cushing, Oklahoma for WTI and West Texas Sour (WTS) at Midland, Texas was \$1.29 per barrel. Price differentials ranged from a low of \$0.21 in February 1985 to a high of \$3.97 in February 1991. During the Gulf War period beginning with Iraq's invasion of Kuwait in early August 1990 and effectively ending with the release of POWs in early March 1991, price differentials were particularly unsettled ranging from \$0.76 in August 1990 to the \$3.97 high in February 1991. Other than during the Gulf War, the greatest differential occurred during November 1991 at \$2.64 per barrel. Thus, the figure illustrates both the routine and the exceptional ranges in volatility.

Figure 3 is particularly interesting in that it compares the same kind of crude (WTI) at both Cushing, Oklahoma and Midland, Texas. Here, as would be expected, the differential is narrower, but much volatility remains. The average differential over the entire period is only \$0.07 per barrel, but it ranges from a high of \$0.46 in April 1990 to a low of -\$0.53 in September 1990. Just last December the price differential was only \$0.04, jumping to \$0.23 in January and to \$0.40 in February.

¹⁵ Each differential is expressed as the WTI spot price at Cushing minus the other spot price.

Figure 2
WTI/Cushing Spot Price Minus WTS/Midland Spot Price
 Price Differential Ranges from \$0.21 to \$3.97

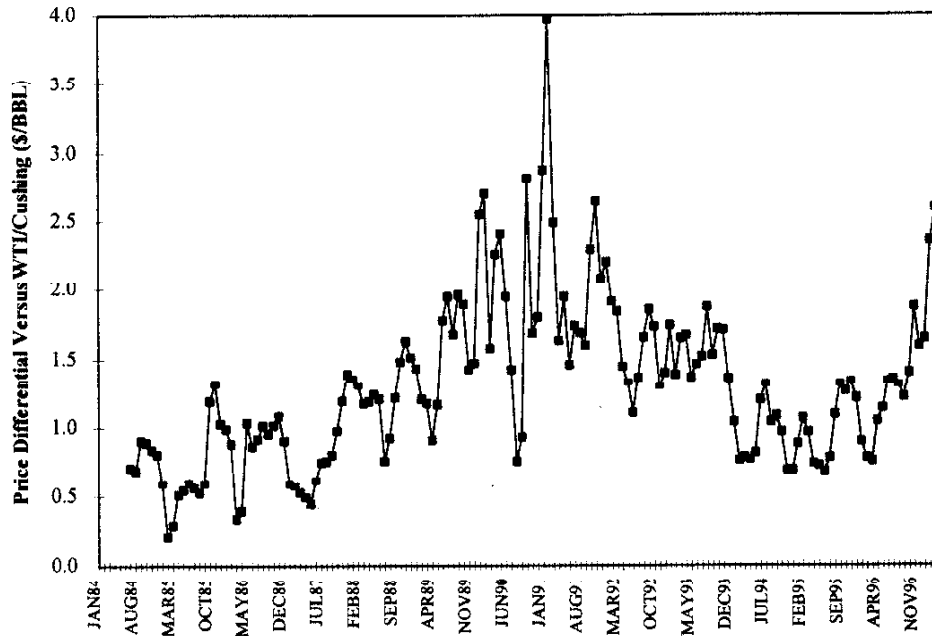
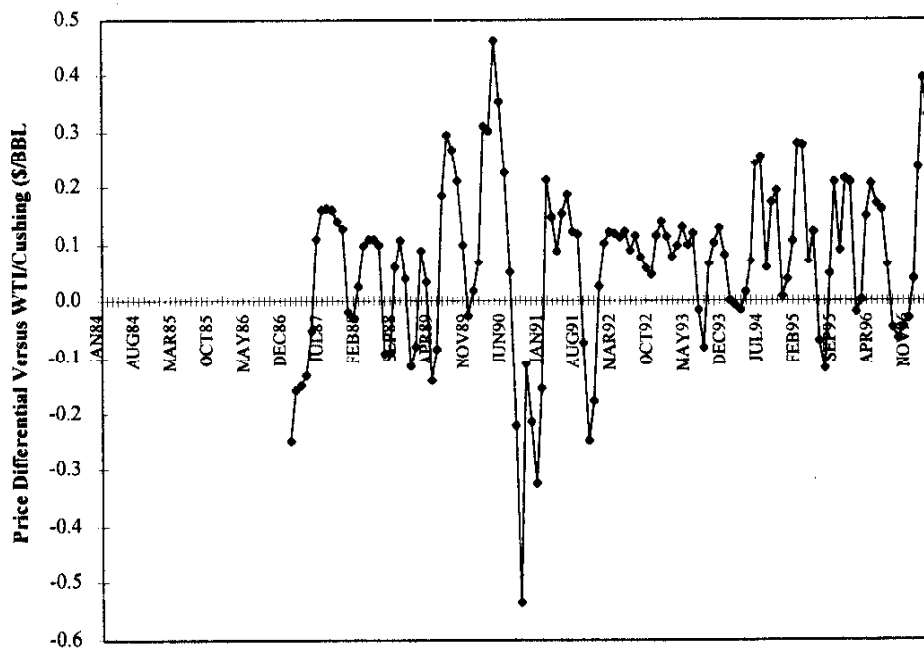
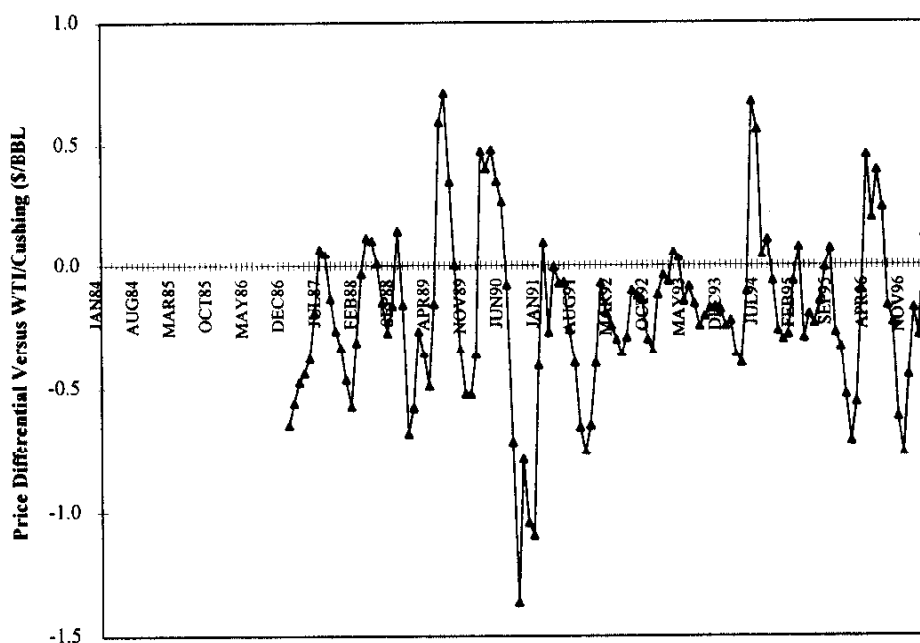


Figure 3
WTI/Cushing Spot Price Minus WTI/Midland Spot Price
 Price Differential Ranges from -\$0.54 to +\$0.46



Figures 4 through 7 show similar patterns of volatility for other significant spot trading markets. Figure 7 is notable in that it illustrates a characteristics of Wyoming Sweet spot prices. There are several periods where the differential with WTI at Cushing is constant for months at a time, giving the appearance of a perfect correlation between the movements of spot prices in Cushing and in Guernsey (the first half of 1987, the second quarter of 1996, and the second half of 1996). On the other hand, in all other periods shown there was great volatility. While we have not been able to verify the relationship, we suspect that reported Wyoming spot prices reflect the lack of any spot trading, or at least the lack of reported trades. The reporting service (Platts) may have made an assessment that, until more data became available, prices would continue to reflect their last known relationship with WTI at Cushing. The assumed stable differential may or may not represent underlying market conditions during these periods.

Figure 4
WTI/Cushing Spot Price Minus LLS/St. James Spot Price
 Price Differential Ranges from -\$1.37 to +\$0.71



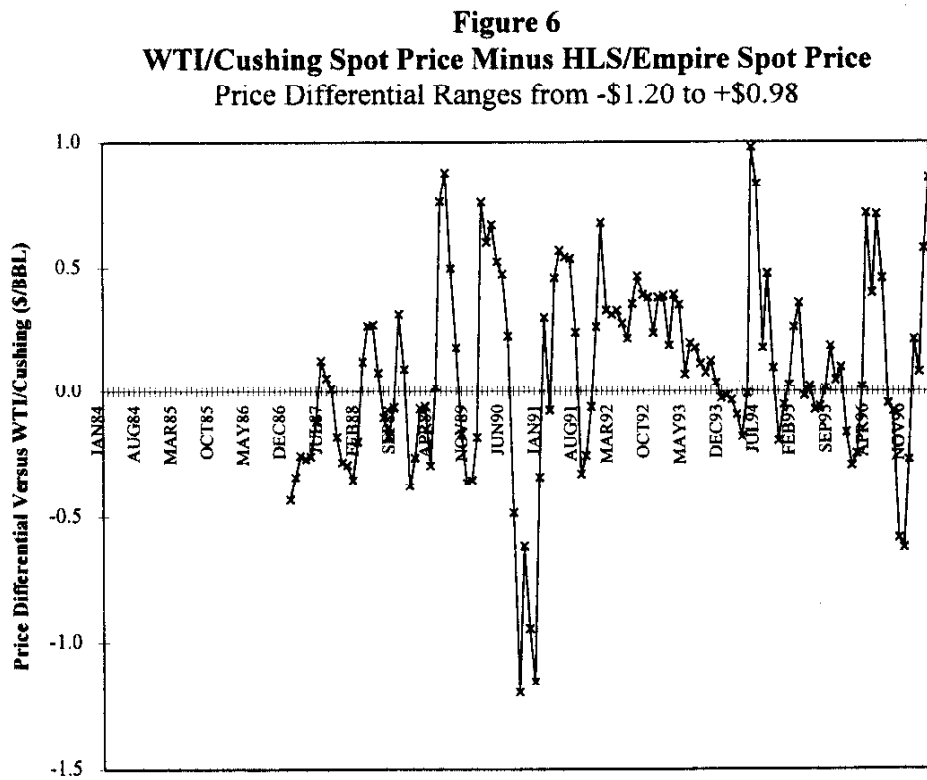
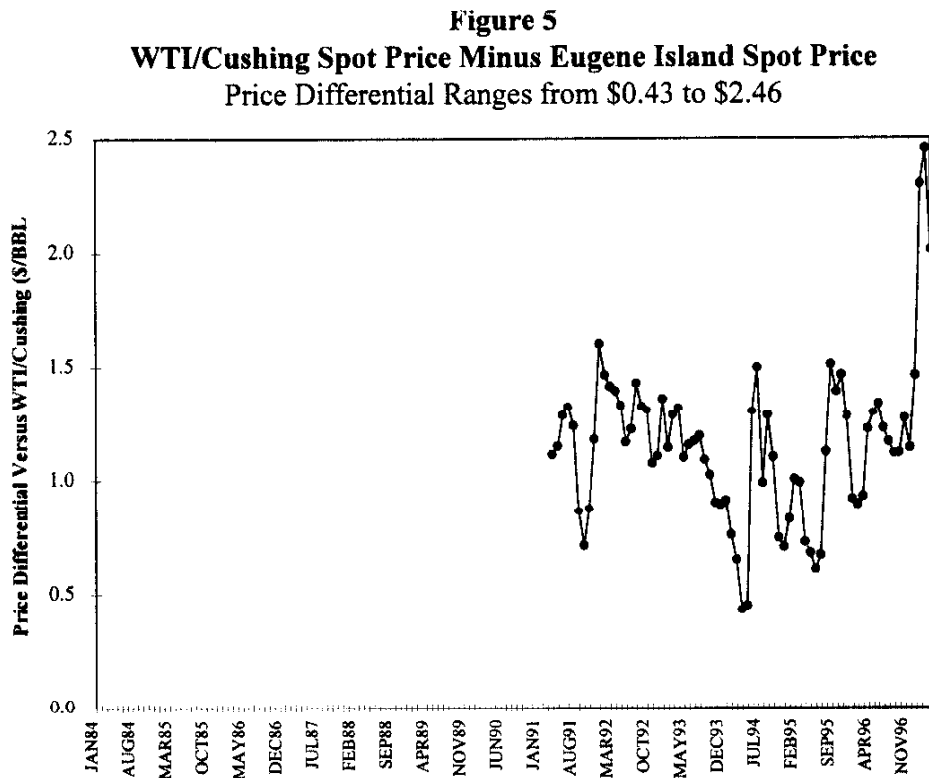
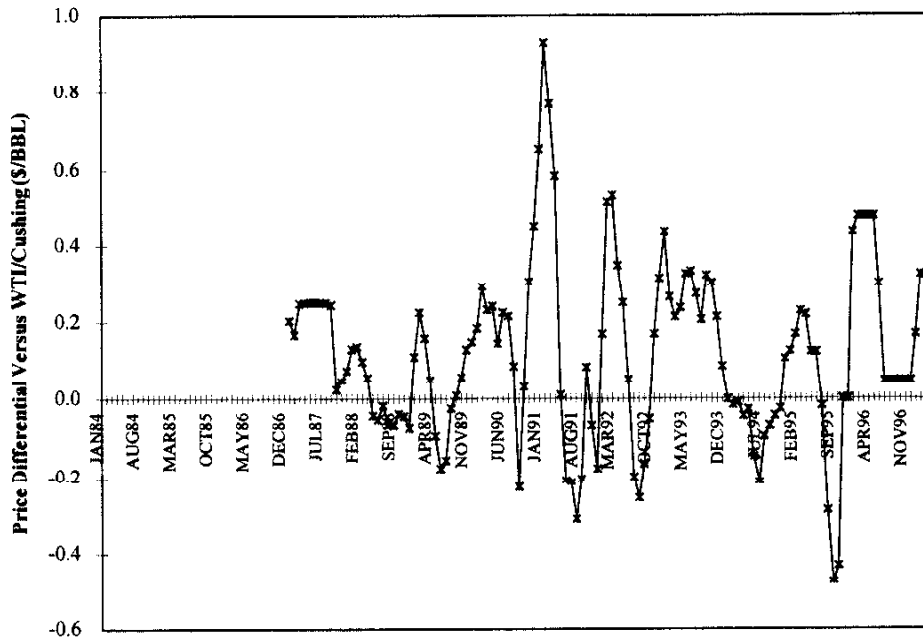


Figure 7
WTI/Cushing Spot Price Minus Wyoming Sweet Spot Price
 Price Differential Ranges from -\$0.48 to +\$0.93



The implications of the relationships illustrated in these figures are reasonably clear. Prices of different qualities of crude oil in different locations do not move together. MMS' method of relying on the relationship reported for one period of time to value crude sold at another period of time will introduce serious measurement errors. The fact that the proposed rule would make monthly spot market-to-spot market adjustments to NYMEX misses the point. While the available data allow such adjustments, albeit with a lag which results in its own distortions, the same kind of volatility will exist in markets where no spot prices are reported by the major services. Under the proposed rule, differentials in these markets will only be captured by MMS' reported oil price differentials which will be at least a year out of date and will be averaged over a year.

Figures 8 through 10 show the variation over time in the differentials between the monthly average ANS California spot price and spot prices at other California locations/qualities, January 1984 to April 1997. Price differentials between ANS and California crudes are even more pronounced than those between WTI and other non-West Coast crudes. This may be in part because (as we understand it) the volumes of ANS traded on the spot market tend to be relatively small, and the prices reported to reporting services are based on small amounts of crude sales (see the discussion in subsection 3 below). Indeed, each of the prices of the three crudes shown in Figures 8 through 10 (Line 63, Kern River, and THUMS) appear to move more closely to each other than to ANS indicating that ANS crude may effectively trade according to the economics of a different level of the market. That is, ANS may tend to trade among different kinds of purchasers or to fulfill different kinds of trading needs than the

other crudes. To the extent that this is the case, ANS would be a particularly poor choice of a crude stream to be used for royalty valuation purposes because of its lack of comparability to other California crude streams.

Figure 8
ANS California Spot Price Minus Line 63 Spot Price
 Price Differential Ranges from -\$0.02 to +\$2.44

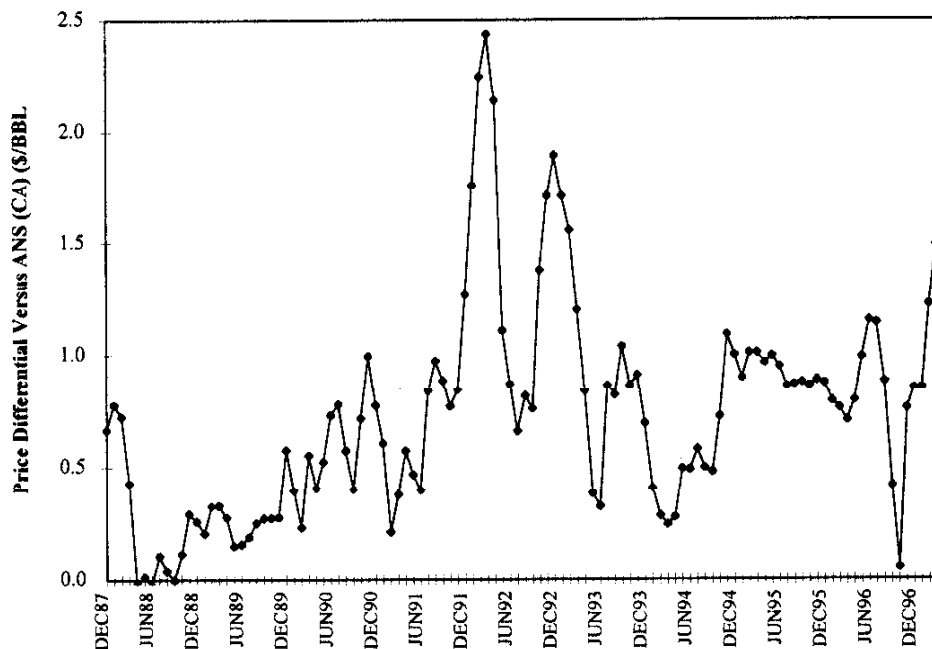


Figure 9
ANS California Spot Price Minus Kern River Spot Price
 Price Differential Ranges from \$2.08 to \$8.87

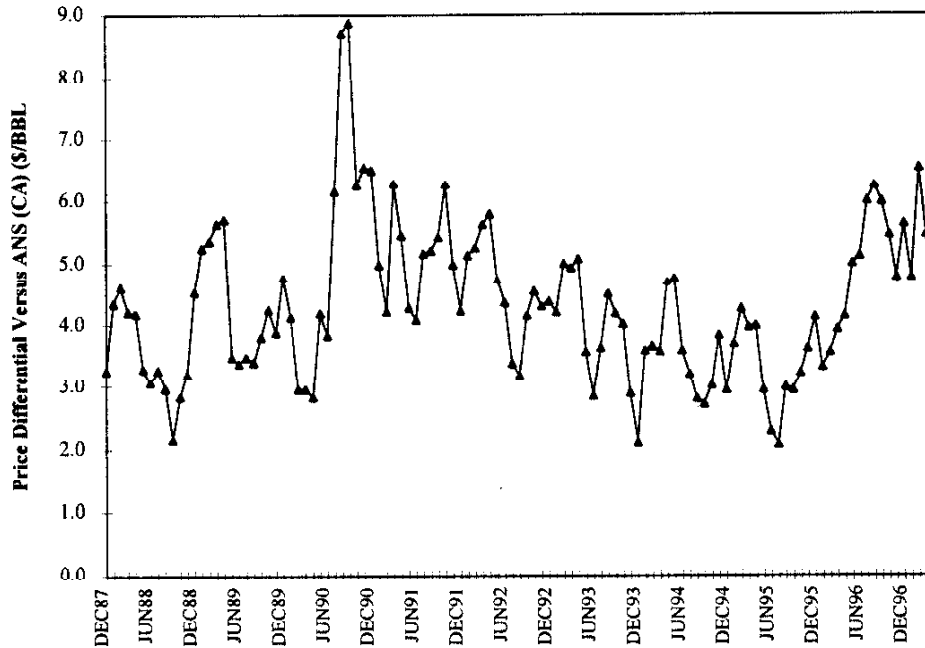
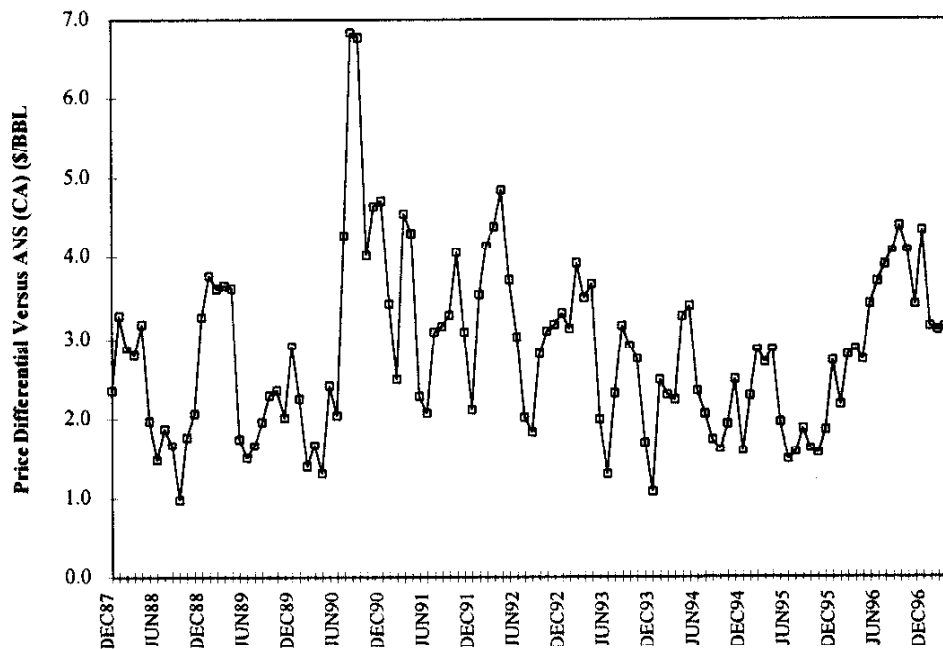


Figure 10
ANS California Spot Price Minus THUMS Spot Price
 Price Differential Ranges from \$0.97 to \$6.84



The volatility shown in the graphs above establishes that "location/quality differentials" vary greatly over time, as the conditions of supply and demand in different markets do not move in lock-step with each other. From this fact we can conclude that the annual average "location/quality price differentials" that MMS proposes to publish for adjusting prices from "market centers" to "aggregation points" can result in very large distortions of market values: for individual transactions at any given point in time, average price differentials from a past year cannot be expected to reflect the true current market assessments of value or the proceeds actually received at the lease by any given lessee.

2. ***Adjustments based on spot price differentials cannot be used to accurately reflect location and quality differentials, because they reflect only one segment of the market and ignore the values set in term contracts and exchange agreements.***

The market value of the crude oil sold at any given market center is not necessarily fairly represented by spot prices. Spot prices represent the cost of obtaining crude for delivery within 30 days. By contrast, a great deal of market activity is accounted for by longer-term contracting arrangements – chiefly refineries contracting for a stable supply of crude over a period of many months. Refiners commonly turn to spot markets to balance out short-term supply/demand imbalances, but rely on longer-term contracts to meet most of their needs. Depending on supply and demand conditions at any given point in time, spot market prices could represent either a premium or discount relative to term contract prices. These facts lead to the conclusion that price discovery in spot markets is bound to be somewhat limited. The large volume of oil that changes hands outside of spot markets should raise doubts about the ability of average spot price differentials to function as indicators of market value differentials between "market centers" for many cases.

3. ***Spot-to-spot price differentials do not accurately represent market-value differentials between crudes of different grades in different locations, because spot price quotes ("assessments") do not always reflect actual market transactions and tend to be "sticky" in thinly-traded markets.***

Spot prices in different local markets do not move in lock-step with each other both because conditions in different markets do not change in lock-step, and because of the way spot price information is gathered and reported by publications such as Platts and Telerate. The quoted spot price "assessments" are based on a limited polling of traders in each market plus the judgments of the publications' reporters. They do not reflect an average of spot transactions or even the price on any particular transaction. Problems with spot market assessments published by reporting services were cited as the reason the Department of Energy ended its long-standing practice of pricing crude from the Elk Hills Naval Petroleum Reserve (NPR)

based on the average of spot prices published by Reuter News Service and Telerate for ANS and Line 63 crude. According to an article in Inside Energy,

... the decision was made ... to switch to the new pricing formula because the two news services said many of the prices they published for ARCO's Line 63 ... represented bids and offers to sell crude oil but not necessarily the final sales price. In addition, only one of the three major oil companies with significant ANS production agreed to divulge confidential pricing information to the news media ...

NPR officials stopped using those news services because they believed the indices were unreliable in that they did not represent a large enough percentage of the volumes of California crude oil being traded on the spot market, he said. Prices posted by major refiners in California or paid for NYMEX futures contracts are "less subject to manipulation" and "seem to be more independently verifiable," he said.¹⁶

On some days, there may be no spot trading, so the quoted price may simply be the same price as reported on the previous day or may reflect a judgment call by the publication's analysts based on information from other markets or recent price differentials with more active markets. When prices do not change as often as underlying market supply and demand conditions due to a lack of trading, prices are said to be "sticky." Volatility in the differential between one spot price and another can be due, in part, to the "stickiness" of one or both of the prices. For example, if the spot market for WTI at Cushing is active and the spot market for WTS at Cushing is thinly traded with sticky prices, we could observe the differential between the prices in the two markets going up or down even if their actual market values relative to each other (as determined by market supply and demand) have not changed.

In thinly traded markets, the assessed price may reflect information from the trades of just a few market participants and, therefore, may be the unique circumstances of these participants and may not be reliable indicators of the underlying market conditions. Also, there is no reason to expect that the factors that influenced one individual's or publication's assessment of the price in one spot market will be the same as those influencing the spot price assessment in another market, or that they will be consistent over time. For these, we could observe day-to-day or month-to-month changes in spot price differentials that do not reflect market information about value but simply reflect imperfections in the spot markets and price reporting process.

4. MMS cannot derive meaningful "location/quality" differentials between "aggregation points" and "market centers" based on the information to be reported on proposed Form MMS-4415.

MMS cannot use a single differential to make adjustments from a given "aggregation point" to a given "market center" for a variety of reasons. This part of the valuation method

¹⁶ "DOE has switched the Way it Sets Prices for Crude Oil it Sells," Inside Energy, March 25, 1996.

represents a fatal flaw in MMS' proposal. Because there are several different crude types (e.g., different grades and gravities) that are traded from a given area, a schedule of differentials would be required for each market center/aggregation point pair to cover all of the quality/location possibilities. However, it will not be possible for MMS to derive such differentials in a statistically reliable manner based on the data to be collected on Form MMS-4415 because the differentials contained in actual sales, exchange, and buy/sell agreements represent several factors that can be impossible to disentangle.

It is important not simply to average together all transactions between a given market center and aggregation point over a given year, because the overall average will blur together the effects of location, gravity, sulfur content, and even transportation costs on market prices. Instead, in order for the differentials to be meaningful adjustments for market valuation, MMS would need to develop a schedule that provides incremental allowances for gravity and sulfur differences for each market center/aggregation point pair. It will not be possible to do this with an adequate degree of statistical precision based on the method proposed or the data provided on Form MMS-4415.

5. There are potentially serious problems with the statistical accuracy and representativeness of the "location/quality" differentials that MMS proposes to publish based on data reported to MMS (on proposed Form MMS-4415).

In our earlier report filed with the Office of Management and Budget, we noted the potentially serious statistical problems with MMS' proposed approach to computing "location/quality" differentials based on the information filed by lessees. Among these is the problem of small samples in cases where few lessees engage in exchange agreements between particular pairs of aggregation points and market centers, or where a relatively small volume of oil is involved. From a statistical viewpoint, one cannot accept the averages of price differentials from small samples of exchanges as being representative of market price differentials for that aggregation point/market center pair. A draft revised proposed rule released by MMS could make the problem even worse.¹⁷

In response to public comments, MMS' draft revised proposed rule contains the following key changes:

- ◆ in cases where crude oil calls are not exercised, the production subject to Federal royalties will not automatically be valued using index pricing;
- ◆ in cases when a crude oil call is exercised and the oil is valued based on the price that other parties are willing to competitively bid to purchase the production (i.e., under the so-called Most-Favored Nation clause), then the oil will not automatically be subject to index pricing;

- ◆ it allows lessees to purchase a small amount of oil for lease operation and for making up for production shortfalls without triggering the requirement that it value its oil using index pricing; and
- ◆ it narrows the proposed Form MMS-4415 filing requirement to collect only information about exchange agreements between an aggregation point and market center (rather than reporting all exchange agreements).

The draft revised proposed rule, while limiting the filing requirement for Form MMS-4415 to exchanges or buy-sell contracts between an aggregation point and a market center, would create serious problems for the utility of any collected information in determining a market value at the lease (even if it were possible to do so using a method like the one proposed). It should be recognized that the revised filing requirement could lead to market distortions that would thwart MMS' efforts to collect reliable and representative data. MMS' draft revised proposed rule may effectively force some companies to restructure transactions so that they will not trigger a costly Form MMS-4415 filing requirement.

If this should happen, MMS may find that only one, two, or perhaps no companies at all provide relevant data for some aggregation point/market center pairs that already have relatively few parties engaged in arm's-length exchange or buy-sell transactions. A small number of responses means that the sample of data available to MMS for estimating average "location/quality" differentials would be reduced, making such estimates even less reliable and leading to inaccurate royalty valuations for those lessees required to rely on that information.

Even worse, because a company would be allowed to use its own arm's-length contract oil price differentials in lieu of the published MMS differentials, the proposed rule may create a new competitive advantage for some companies. That is, one company will be using current market-based differentials for the specific arm's-length exchange or buy-sell contract, while its competitors who engaged in non-arm's-length contracts at the lease will be forced to use average differentials in existence during the prior year.

The costs and inefficiencies that would be imposed on both lessees by the proposed rule are entirely avoidable and unnecessary, because an active market exists for oil at the lease that would allow a more straightforward and less costly approach to royalty valuation. Observed market prices are a much more accurate and inexpensive basis of royalty valuation than a bureaucratic system of ad hoc valuation formulas and reporting requirements. The following section describes a possible approach that would lead to a less burdensome and more market-oriented approach to royalty valuation.

¹⁷ See the attached draft "Amendments to Proposed Regulations to Establish Oil Value for Royalty Due on Federal Leases." While MMS has not yet published the revised proposed rule as of the time these comments are being prepared, we understand that the draft is indicative of MMS' current deliberations.

6. *Standardized location/quality differentials set once per year or month are not appropriate due to changing market conditions.*

For example, the relative demands for crudes of various sulfur contents and gravities change over the course of the year as the demands for different refined products vary (or due to such events as refinery shutdowns, weather, etc.). The true market value of Federal oil – or any oil – extracted and sold is established at a point in time, not on average. This point was illustrated in Figures 2 through 10, which show how much spot price differentials can vary within a given year. For example, Figure 2 shows the spot price differential between WTI at Cushing, OK, and WTS at Midland, TX. During the year 1991, the differential ranged from \$1.58/bbl (7.9 percent) to \$3.97/bbl (24.0 percent), with an average for the year of \$2.20/bbl (11.6 percent). Basing NYMEX price adjustments on monthly average spot price differentials clearly disadvantages those lessees who sold their crude at points during the month when the differential was smaller than the average. This example illustrates that the cost imposed on such lessees can be quite large. Similarly, Figures 2 through 10 show how much the differentials can vary from year to year, suggesting that setting “location/quality differentials” on an annual basis based on exchange agreements reported to MMS will impose large costs on many lessees. The incidence of these costs of misvaluation will be random – a lottery dependent on the unpredictable changes in the relative market values of different grades and qualities of crude in different locations.

7. *The transportation cost deduction permitted under the proposed valuation method results in an upward bias in the oil value assessed for royalty purposes.*

The proposed rule includes the value of certain downstream services in its calculations of value at the lease, resulting in an upward bias in royalty value. The price differential between the lease and an “aggregation point” for a given grade and quality of oil is not the same as the cost of transporting that oil from the lease to the “aggregation point” – the differential is generally greater than the costs of transportation. Therefore, starting from some aggregation point (or market center), backing off the cost of transportation as a means of calculating a value at the lease will bias the calculated value of the crude upward to the extent that additional services (such as aggregation and marketing) add value to the crude between these two locations.

If we accept the premise that independent marketers provide a valuable service that involves not just moving oil from one location to another but also aggregating oil¹⁸, finding buyers, maintaining long-term relationships with buyers, contracting, tracking markets, timing sales,

¹⁸ Aggregating crude can add value in the sense that, other things equal, the larger, commingled volume of crude generally can be sold for a higher price than each of the smaller individual streams if they are sold separately. It should be noted that aggregating or commingling different streams of crude (e.g., in a pipeline) does not necessarily increase the value of every stream, because of quality and gravity differences. If there is no gravity bank, then (independently of the value of aggregating small streams into a larger pool) crude will lose value if it is commingled with stream that has lower gravity, and gain value if commingled with a stream with higher gravity.

and bearing risk¹⁹, then it follows that this value is added regardless of whether the oil sold at the lease (at arm's length) to an independent marketer or is transported by the producer to an aggregation point or market center and sold there. Nevertheless, MMS proposes to treat these two kinds of scenarios differently under the proposed rule. If a producer sells its oil at arm's length at the lease, it pays royalties based on its "gross proceeds." However, if the same producer does its own marketing and disposes of this oil in an exchange agreement away from the lease, MMS' proposed method will force it to pay royalties on the value at the lease *plus* at least some portion of the additional value contributed by marketing services. So the proposed rule imposes different royalty liabilities on the same oil depending upon how it is disposed of.

This differential treatment could introduce distortions into the market, in that it may force producers to contract out beyond-the-lease marketing services that they otherwise would have performed themselves. If so, it would be to the benefit of marketing companies and to the detriment of affected lessees.

8. *MMS' proposed one-size-fits-all "location/quality" value differentials do not account for the fact that the various local oil markets in the U.S. do not move in lock-step with each other, and respond to very different supply and demand factors.*

MMS' valuation method for making "location/quality" adjustments based on averages assumes the existence of stable relationships between light sweet crude oil at Cushing and oil of various grades at all other (non-California, non-Alaska) locations, as well as a stable relationship between the NYMEX futures price and the WTI spot price. Such relationships do not exist across the board, as illustrated above in Figures 2 through 10. Figure 11 in the next section shows that even the relationship between the NYMEX futures price and WTI spot price at Cushing is unstable. The physical separation of geographically dispersed markets, the costs of transportation between them, regional differences in supply and demand conditions, and regional differences in the grades and volumes of crude required to supply refineries all mean that prices in the many local markets will not move in perfect sync with each other. MMS' proposed method of basing oil values on average prices and differentials is bound to fail because it implicitly relies on some notion of stability in the price relationships among markets.

9. *MMS has not attempted to determine whether its proposed valuation method results in fair and reasonable estimates of crude oil value at the lease.*

The proposition that MMS' valuation method will yield fair market values for crude at the lease remains an untested assertion. We have shown that the theoretical and practical bases

¹⁹ Marketing intermediaries bear the risk of price fluctuations, loss due to spills or transportation failure, credit risk of purchasers and force majeure, and they earn a profit for accepting such risks.

for its adjustments to the NYMEX futures price are problematic at best. Even though the proposed rule changes represent a major departure from current practices, MMS has apparently made no attempt to test its method for calculating value based on NYMEX futures prices, spot prices, "location/quality differentials" and transportation costs (it mentioned no such studies in the NOPR, provided no such information in the FOIA responses, and stated in FOIA correspondence all relevant studies and documents had been provided). MMS does not, therefore, know how much variation there is in location/quality differentials across exchange agreements during any given period of time. It does not know how well its method's calculated values match up with prices in actual arm's-length transactions.

GENERAL PROBLEMS WITH THE RULE

In addition to the specific problems discussed above that would lead to incorrect assessments of royalty values, MMS' proposed valuation method would impose inefficiencies and distortions on the oil market, impose unnecessary risks on lessees, and treat lessees differently based on characteristics that are irrelevant to fair oil valuation. It also incorrectly assumes that all lessees will have access to all of the information required to comply with the proposed rule, and it faces serious problems of statistical accuracy.

1. MMS' valuation method would impose inefficiencies and distortions on the market for crude oil.

Inefficiencies will be imposed on the market by MMS' proposed valuation method, because NYMEX futures prices do not move exactly in sync with prices in the many local markets. Lessees will be put in a position of having to bear "royalty basis risk" to the extent that the actual prices in each local market diverge from the NYMEX- or ANS-based royalty valuations. Individual lessees will have to decide for themselves how to deal with this risk, but for some it may mean undertaking costly hedging activities using NYMEX futures. If it had been profitable for these producers in the various local markets to hedge using NYMEX, then they would have done so already. Effectively forcing them to do so by imposing this basis risk would be a waste of resources.

2. MMS' valuation method would impose unnecessary risks on lessees and result in market distortions.

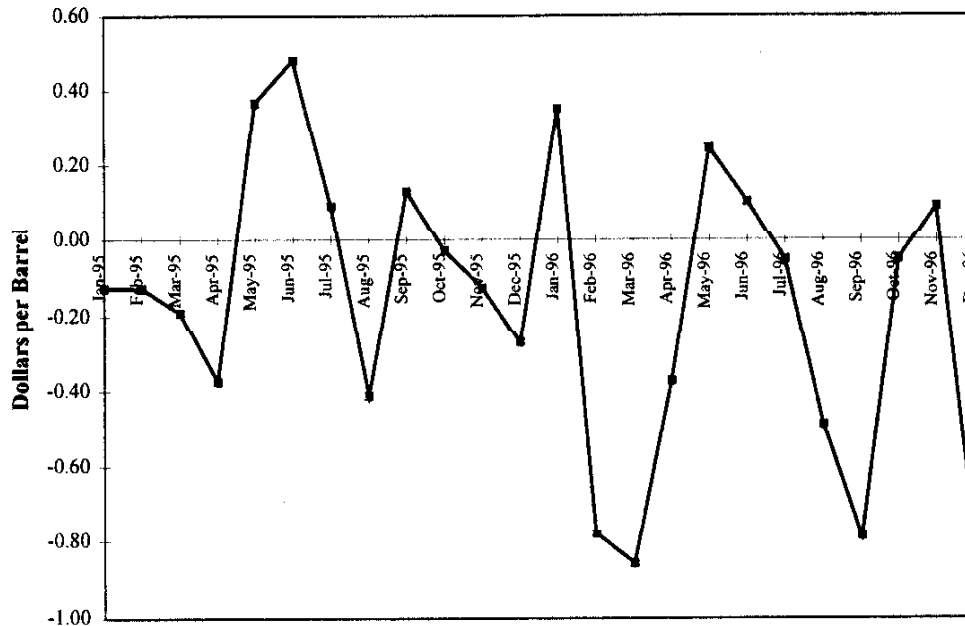
The proposed valuation method imposes three types of basis risk on lessees – quality, location, and timing. To understand the concept of basis risk, consider the following hedging example: Imagine a producer of sour crude in Wyoming attempting to hedge its oil price risk by selling NYMEX light, sweet crude oil futures. Even though it may buy a quantity of futures contracts to match exactly its future production plans, it will still not be fully insulated from changes in market oil prices because (a) its location is different from Cushing,

so that it bears the risk associated with changes in the relative supply and demand in the two locations; and (b) the quality of its oil is not the kind deliverable against the futures contracts, so that it faces the risk associated with changes in the relative market values of the two grades of crude. In addition, unless the producer matches the maturities of its futures contracts with the expected sales dates of its oil, then there is an additional risk induced by the timing difference. These are all forms of basis risk. The timing risk is the easiest for the hedger to deal with – by arranging its futures portfolio correctly – assuming that the timing and volumes of future production are forecastable. The other kinds of basis risk cannot be hedged unless the producer is able to engage in forward contracts to swap its oil for a quality that is deliverable against a NYMEX contract at Cushing. For example, futures are offered on NYMEX for West Texas Sour crude at Cushing, but there is very little trading activity in these contracts. MMS' proposed valuation method runs into problems similar to those faced by this hypothetical producer/hedger.

MMS proposes to bridge the gap between Cushing and the producer's location, and between NYMEX-grade crude and the lessee's crude, by using adjustments to the average NYMEX price based on spot price differentials and exchange agreement differentials. The critical question is: Does the MMS' method successfully bridge this gap, or does it effectively impose basis risk on lessees? The answer is the latter – the lessee will face all three sorts of basis risk identified above because of the averaging involved in the application of spot prices and "location/quality" differentials from exchange agreements.

The following graph shows how much the difference between the NYMEX light sweet crude futures price and the WTI spot price at Cushing changes from month to month over the 1995-96 period. Over this period, the difference between the monthly averages of these two prices ranged between -\$0.86 and +\$0.48. Given that MMS' proposed valuation method makes no allowance or adjustment for changes in this relationship (i.e., for a form of "basis risk"), it likely will result in valuations that do not reflect actual market values at the lease.

Figure 11
Spot Minus Futures: Average Spot Price for WTI at Cushing Minus Average
Prompt-Month NYMEX Light, Sweet Crude Futures Price, 1995 to 1996
 Price Differential Ranges from $-\$0.86$ to $+\$0.48$



The timing risk can be especially problematic given the volatility in location and quality differentials demonstrated above. Consider, for example, a producer who produces and sells its oil on April 1. The actual price it receives is set on April 1, but the NYMEX-based method imposes on this producer the risk of May futures price changes that will occur over the remainder of April – because the royalty value of the oil produced on April 1 is based on the average futures price for the entire month that is prompt on April 1. If the price has risen substantially by the end of the prompt month (compared to April 1), then the producer can end up paying a royalty based on a value significantly higher than what it actually received at the time of sale. Of course, if a producer produces and sells its oil ratably over the month, then this particular kind of monthly averaging will not matter because the daily gains and losses imposed by averaging will exactly cancel each other out over the course of the month. However, the important point is that sales are not made ratably – at an equal rate per day – in a great many cases. For example, if a small producer has its oil picked up by truck just once or twice per month, with the price set on the day of the pick-up, then the producer will be subjected to this sort of royalty risk. Similarly, if a producer experiences a disruption to its normally ratable production during some period, then it will be subjected to this risk.

3. *Producers would be treated differently by the proposed rule based on the kinds of contracting arrangements they use.*

If there are any discounts implicit in longer-term contracts or in contracts for larger quantities, then these will distort any attempted estimates of "location/quality differentials" based on Form MMS-4415. The result would be that different producers may be treated differently by the proposed valuation method. For example, suppose that in an exchange of heavy oil for light oil between a given "aggregation point" and "market center," one producer is able to get a higher price for its heavy oil in the form of a smaller differential charged in the exchange agreement. Then the proposed valuation method would have the effect of biasing upward the valuation of a another producer's heavy oil exchanged between the two points relative to the value it actually received in its exchange agreement. This is simply an illustration of the point that the actual value of a specific volume of oil sold or exchanged at a particular point in time is determined in part by the circumstances and needs of the particular parties involved. While one can compute an average market value, there really is no *one* market value that applies to all market participants for all transactions in a given month.

4. *MMS' valuation method incorrectly assumes that all lessees will have access to information that not all lessees will actually have.*

Acquiring the information required to implement MMS' proposed valuation method will be costly to lessees and, in some cases, impossible. If a lessee actually sells all of its oil at the lease, but its sales are classified as non-arm's-length under the proposed rule (because it engages in exchange agreements or has purchased oil in the past two years), it will not have access to all the information required to calculate royalty value according to MMS' method. It can purchase data on futures and spot prices, but will not have any transportation costs to use as a basis for computing the allowed transportation deduction because it will not actually have transported its oil beyond the lease.²⁰ In the absence of this information, the proposed rule offers lessees in this situation no alternative but to base royalty payments on the royalty value computed at the nearest "aggregation point" instead of at the lease, foregoing the final deduction allowed in the royalty valuation formula. Indeed, MMS refers to the transportation cost deduction as "optional".²¹ Lessees lacking information on transportation costs will be forced to exercise this "option" to their own detriment.

²⁰ The transportation cost allowed under the proposed rule are the "actual costs of transportation" as defined by MMS in 62 Fed. Reg. 3754-3755. Unlike the 1988 rule, the proposed rule does not allow a lessee to use FERC or State-approved pipeline tariffs as its transportation cost when it ships oil through a pipeline in which it owns a sufficient interest for it to be deemed in "control" of the pipeline.

²¹ 62 Fed. Reg. 3754.

5. *The month chosen by MMS for averaging NYMEX futures prices does not reflect the market's assessment of the value of oil delivered during a lessee's actual production month.*

The month chosen by MMS for computing average NYMEX prices – the month that is the prompt month when the oil production in question occurs – is not even the most relevant month for their intended purpose. MMS chose the prompt month because “[a]lthough it is a futures price, it would reflect the market’s assessment of value during the production month.”²² This reasoning reflects an incorrect understanding of futures markets. MMS proposes to base the price of, for example, September production on the average price in September of a futures contract for delivery in October. The price of this October futures contract is based on market expectations regarding what oil prices will be in October, not what they actually are in September – the delivery month in this example. The average price in September of the October futures does reflect the information available to the market in September, but the information it reflects is not about September production.

In addition, the reason given by MMS (quoted in the previous paragraph) does not logically lead to the choice of the prompt contract as the basis for valuation, because many other futures contracts for different future delivery dates are traded during the production month, and all, in some sense, “reflect the market’s assessment of value during the production month.” Logically, longer-dated futures contracts (those with delivery two, three, four or more months in the future) are less reliable indicators of the market value of oil produced and sold today, even though they reflect today’s information. The difference between the prompt contract and longer-dated contracts is merely a matter of degree.

While it is generally the case that the average futures price in the prompt month will be correlated with the average price for the futures contract with delivery in the production month (because oil is a storable commodity and both will reflect broad market forces), it is not the case that the two will move in lock-step. Therefore, MMS’ choice of the month for NYMEX averaging will introduce an element of basis risk. MMS’ choice of month for averaging will result in overvaluation during some periods and undervaluation during others: During some periods, commodity futures prices exhibit a so-called “contango” pattern in which futures prices are higher than contemporaneous cash (spot) prices. In other periods, when the commodity available for immediate delivery is in short supply relative to demand, spot prices will rise above futures prices – a situation known as “backwardation.” For the period 1984 to 1992, it appears that backwardation was the most common pattern.²³

NYMEX daily transaction data for 1995 and 1996 show that, on average, the MMS-prescribed average prompt month price exceeded the average price for the futures contract with delivery in the production month by about \$0.30 per barrel (see Table 1). This resulted from the fact that oil prices generally rose over this two-year period, so that prices during the month that would have been used for averaging under MMS’ proposed rule were typically

²² 62 Fed. Reg. 3745.

²³ See Robert H. Litzenberger and Nir Rabinowitz, “Backwardation in Oil Futures Markets: Theory and Empirical Evidence,” Journal of Finance, Vol. L, No. 5, December 1995.

higher than over the previous month. This means that in a market where oil prices are trending upward lessees will be paying royalties based on price increases that occur after their production and sales take place, leading to overpayment of royalties. Conversely (ignoring for the moment other sources of bias in MMS' proposed method), when prices are trending down MMS would tend to receive royalties based on a valuation that is less than lease market value. There is no reason to believe that the two biases would tend cancel out over time for any individual lessee, or in the aggregate, because oil prices do not follow a deterministic cycle.

Table 1
Valuation Bias Induced by Using Prompt Futures Contract Instead of Contract for
Delivery in Lessee's Production Month, 2/95 to 12/96

| (1) Production Month | (2) Prompt Futures Contract | (3) Average Price for Prompt Month (\$/bbl) | (4) Average Price of Nearest Futures That Delivers in Production Month (\$/bbl) | (5) Difference (\$/bbl) (3) - (4) |
|---------------------------------------|-----------------------------------|--|--|--|
| Feb-95 | Mar-95 | 18.4195 | 17.8793 | 0.5402 |
| Mar-95 | Apr-95 | 18.3565 | 18.4195 | -0.0630 |
| Apr-95 | May-95 | 19.4725 | 18.3565 | 1.1160 |
| May-95 | Jun-95 | 20.0577 | 19.4725 | 0.5852 |
| Jun-95 | Jul-95 | 18.8967 | 20.0577 | -1.1611 |
| Jul-95 | Aug-95 | 17.4016 | 18.8967 | -1.4951 |
| Aug-95 | Sep-95 | 17.6209 | 17.4016 | 0.2193 |
| Sep-95 | Oct-95 | 18.3335 | 17.6209 | 0.7126 |
| Oct-95 | Nov-95 | 17.4091 | 18.3335 | -0.9244 |
| Nov-95 | Dec-95 | 17.8591 | 17.4091 | 0.4500 |
| Dec-95 | Jan-96 | 18.7489 | 17.8591 | 0.8898 |
| Jan-96 | Feb-96 | 19.2505 | 18.7489 | 0.5015 |
| Feb-96 | Mar-96 | 18.3167 | 19.2505 | -0.9338 |
| Mar-96 | Apr-96 | 20.4695 | 18.3167 | 2.1528 |
| Apr-96 | May-96 | 23.1005 | 20.4695 | 2.6310 |
| May-96 | Jun-96 | 21.5119 | 23.1005 | -1.5885 |
| Jun-96 | Jul-96 | 20.5552 | 21.5119 | -0.9567 |
| Jul-96 | Aug-96 | 21.2757 | 20.5552 | 0.7204 |
| Aug-96 | Sep-96 | 21.4400 | 21.2757 | 0.1643 |
| Sep-96 | Oct-96 | 23.1305 | 21.4400 | 1.6905 |
| Oct-96 | Nov-96 | 24.8468 | 23.1305 | 1.7164 |
| Nov-96 | Dec-96 | 23.8133 | 24.8468 | -1.0335 |
| Dec-96 | Jan-97 | 24.7184 | 23.8133 | 0.9051 |
| Minimum Difference | | | | -\$1.5885 |
| Maximum Difference | | | | 2.6310 |
| Average Overvaluation for 1995 | | | | 0.0791 |
| Average Overvaluation for 1996 | | | | 0.4975 |
| Overall Average Overvaluation | | | | 0.2974 |

IV. DISCUSSION OF VALUING CRUDE OIL FOR FEDERAL ROYALTY PURPOSES

The proposed rule released by MMS has generated considerable controversy over the valuation of crude oil for Federal royalty purposes. This section of our report first briefly reviews MMS' existing and proposed crude oil valuation regulations, followed by a discussion of why MMS wishes to abandon the 1988 regulations in favor of the proposed NYMEX- and ANS-based valuation method. Next, is a discussion of conceptual and administrative issues that any successful valuation method should address. Finally, we discuss an existing methodology that, unlike the proposed rule, will capture the value of crude oil at the lease that has been disposed of in other than arm's-length transactions.

CURRENT MMS/DOI VALUATION REGULATIONS

The current MMS/DOI valuation method is based upon regulations promulgated in 1988 that establish value based upon the greater of "gross proceeds" or the first applicable of five benchmarks. MMS no longer regards these rules to be adequate, at least in part because of the rule's reliance on posted prices in the first benchmark. MMS asserts that posted prices "no longer relate to how most crude oil is marketed."²⁴

Oil sold under an arm's-length contract

The value of crude oil sold under an arm's-length contract is generally equal to the gross proceeds accruing to the lessee. The lessee is responsible for demonstrating that its contract is arm's-length. If the contract does not reflect total consideration actually transferred, the five benchmarks described in the next section are used to determine value.

Oil not sold under an arm's-length contract

If the oil is not sold under an arm's-length contract, the value is calculated using the greater of "gross proceeds" or the first applicable of the following five benchmarks:²⁵

1. *the lessee's contemporaneous posted prices or oil sales contract prices used in arm's-length transactions for purchases or sales of like-quality oil in the same field, provided these are comparable to other posted prices or sales contract prices;*
2. *the arithmetic average of contemporaneous posted prices used in arm's-length transactions by persons other than the lessee for purchases or sales of significant quantities of like-quality oil in the same field;*
3. *the arithmetic average of contemporaneous arm's-length contract prices for purchases of significant quantities of like-quality oil in the same area or nearby areas;*

²⁴ 62 Fed. Reg. 3743.

²⁵ 53 Fed. Reg. 1218-1222, January 15, 1988.

4. *prices received for arm's-length spot sales of significant quantities of like-quality oil from the same field (or same area) with adjustments for other matters unique to the circumstances of the lease or salability of the oil; or*
5. *a net-back method or any other reasonable method.*

In using any of the above methods for both arm's-length and non-arm's-length contracts, the lessee may deduct a transportation allowance equal to the "reasonable, actual costs" of transporting the oil (Section 206.104). In certain circumstances, the lessee may use Federal Energy Regulatory Commission ("FERC") or State tariffs instead of transportation costs calculated using an MMS method.

PROPOSED MMS RULE

MMS has proposed a new rule where "valuation of production sold under arm's-length contracts would essentially stay the same, but the number of transactions considered to be actual sales at arm's-length would be limited..."²⁶ Sales not at arm's-length would include all exchanges, or buy-sell arrangements. Production subject to crude calls would be deemed as not at arm's-length. For crude not sold at arm's length, MMS' proposed rule would establish a national royalty valuation method based on either NYMEX or the spot price of ANS crude, depending on the location of production. This approach is an attempt to use a netback method where an "index pricing point" value is first established and, through a series of adjustments for location, quality, and transportation, a net value at the lease is determined.

MMS' reasons for change

The primary reason for MMS' abandonment of the 1988 regulations appears to be its belief that few "true" arm's-length transactions occur at the lease, and that multiple dealings between market participants and the pricing terms of exchange agreements offer opportunities to hide the true consideration received in apparently arm's-length transactions for lease crude. Specifically,

*Because of the frequency of oil exchange agreements, reciprocal deals between crude oil buyers and sellers, and other factors where the real consideration for the transaction could be hidden, arm's-length contract prices would be used as royalty value only by producers who do not also purchase crude oil.*²⁷

MMS is proposing this limitation [on the use of gross proceeds as royalty value] because of concerns that multiple dealings between the same participants, while apparently at arm's-length, may be suspect concerning the contractual price terms. Just as with exchange agreements ..., a producer may have less incentive to capture

²⁶ 62 Fed. Reg. 3743, January 24, 1997.

²⁷ 62 Fed. Reg. 3742.

*full market value in its sales contracts if it knows it will have reciprocal dealings where it may be able to buy oil at less than market value.*²⁸

Notwithstanding the general reliance upon gross proceeds, MMS has questioned the value on which royalties are paid in arm's-length transactions between unrelated parties. In some of these transactions, MMS believes that premia have been paid which have not been included in the gross proceeds for royalty valuation. Further, MMS believes that it is difficult to determine whether such premia have been paid, even under audit.

Therefore, MMS has concluded that the "true" gross proceeds received at the lease are not generally known to either MMS or the marketplace for related-party transactions as well as for most apparently arm's-length transactions. As a result, MMS believes that prices from transactions observed at the lease cannot be used as measures of value.

MMS' description of the marketplace is incomplete and largely incorrect. Its proposed valuation method for related party transactions is inaccurate and inappropriate (see discussion in Section III). As discussed below, an accurate and administrable methodology already exists for valuing crude oil at the lease in non-arm's-length transactions. Before discussing this methodology, it is first appropriate to discuss conceptual issues that should be addressed by any non-arm's-length royalty valuation system.

Conceptual issues to be addressed

The proposed rule attempts to accomplish a number of purposes. It proposes a new valuation method for non-arm's-length transactions and would impose this method on what most objective observers would consider to be arm's-length transactions. It restricts the use of pipeline tariffs for making adjustments to prices to reflect transportation costs. It extends the point where value is measured to potentially include value that is added beyond the lease – reflecting a newly conceived "duty to market" concept. As a result of these changes, the proposed rule would establish a value that is different from (and likely above) a realized arm's-length price at the lease and, in all respects, is not an actual lease market value.

The fundamental economic relationship between the lessee and the lessor is that the lessor should receive the mutually agreed upon royalty rate multiplied by the value of the crude oil at or near the wellhead. This has generally been interpreted as the value of the crude oil when it leaves the lease.²⁹ Because this value is not always observable in the marketplace, a variety of measures have been considered for determining this value, particularly when the lessee is selling the oil to itself or an affiliate in a non-arm's-length transaction. The 1988 regulations address this issue by setting the value equal to the greater of gross proceeds or the first applicable of the five benchmarks.

²⁸ 62 Fed. Reg. 3743.

²⁹ For example, MMS' proposed valuation method has the stated purpose of deriving a value of crude at the lease: "The allowable adjustments and deductions would reflect the location/quality differentials and transportation costs associated with value differences between oil produced at the lease and oil at the index pricing point." 62 Fed. Reg. 3747.

Characteristics of a good royalty system

In requesting alternative approaches, MMS stated that suggestions for market indicators in the vicinity of the lease should consider the following:

- (1) The methods should not rely on posted prices unless they account for the difference between postings and market value.*
- (2) The methods must account for value differences related to quality and location.*
- (3) The methods must be widely applicable and flexible enough to apply nationwide.*
- (4) Most importantly, the methods must reflect the general concepts of fair market value – the agreed-upon cash price between willing and knowledgeable buyers and sellers if neither were under undue pressure.³⁰*

While agreeing with these concepts, we also believe that they should be restated and expanded to include the following:

- ♦ Need to be market driven. The general concept of fair market value reflects the agreed-upon cash price in actual transactions between unrelated willing and knowledgeable buyers and sellers if neither were under undue pressure.
- ♦ Is based on arm's-length prices actually received in the marketplace. To do otherwise, as with the proposed valuation method, violates the fair market value concept.
- ♦ Recognizes that arm's-length prices received vary from transaction to transaction. There is *no single price* for crude oil, or indeed for any other commodity, in any given field or area – let alone in a region or nationwide. True arm's-length prices for a given quality, location, and point in time vary depending upon the specific needs of the buyer and the seller. Any accurate valuation system must recognize that the appropriate value will fall within a reasonable range rather than being a single number.
- ♦ Recognizes and allows a deduction for value added after crude oil leaves the lease. Various steps and processes are required that add value to crude oil as it moves to its final destination. This value may be added by the lessee and/or other unrelated parties, as title to the crude may change hands many times between the lease and an aggregation point. Adding this value requires investments, results in costs, and necessitates a market rate of return. It is no more appropriate to impose royalties on crude oil marketing costs than it is to impose royalties on the costs of operating a gasoline station. Both add value to the product. Neither requires investment by the lessor. Neither is related to the mineral rights of the lessor. This added value is not the result of the lessors ownership of mineral rights.

³⁰ 62 Fed. Reg. 3746.

- ♦ Is administrable by MMS and by lessees. A system that results in a theoretically correct measure of value but cannot be administered will frustrate the intent of all parties.
- ♦ Is perceived by all parties as providing fairness and equity to producers, operators, marketers, refiners, the Federal Government, state governments, and Indian tribes. If some parties do not believe they are being treated fairly, the credibility of the system will suffer, disputes and challenges will result, investment and production will fall, and the rule will have failed.
- ♦ Avoids economic distortions. Any rule that produces an inappropriate value will distort investment and production decisions. If the effective royalty rate exceeds the contractual royalty rate through the use of a method that overstates market value, less investment and production may result. This may ultimately lead to reduced royalties from production on government lands.
- ♦ Avoids distributional inequities. As with economic distortions more generally, any system that unduly burdens one segment of the industry more than another will result in not only the perception of unfairness, but also in resource misallocation. If small producers are unfairly burdened through disproportionately high compliance costs, their operating costs will increase and the value of their holdings will fall. In the long run, this could encourage industry consolidation so that a smaller number of companies would operate on Federal lands. Less competition would be harmful to the market place. Similarly, if the rule should result in large, integrated companies bearing a disproportionate share of the costs, it could affect their market values and investment patterns. This may ultimately lead to properties being spun off or sold at what would otherwise be less than market value to smaller producers who might not be able to operate them as efficiently as larger producers. Care must be taken to avoid distributional inequities among companies of different sizes and among companies with different roles in the marketplace. If valuation rules disproportionately affect, for example, refiners or resellers, they may be forced to play a reduced role in the market. As a result, any valuation system should be designed to avoid distorting investment and production decisions based upon company characteristics. To do otherwise will create market distortions to the detriment of the industry and the Nation's economy.
- ♦ Is capable of being applied fairly to changing markets. U.S. crude oil markets are dynamic and ever-changing. A rule that is inflexible and does not allow for changes in the relative market values of crudes of different qualities or in different locations will fail to reliably assess fair market values.

An existing approach to valuation

MMS should carefully investigate other approaches to crude oil royalty valuation before committing to a radical and costly change in the regulations. The royalty-in-kind program recently adopted in Alberta, Canada is one existing approach that would satisfy the above criteria, satisfy MMS' concerns regarding certainty and simplicity in the royalty valuation

process, and minimize the compliance burdens faced by lessees and the administrative costs faced by MMS.

During 1996, the Alberta Department of Energy implemented a program that requires all government-owned crude oil to be taken in kind and to be disposed of on the market by independent marketers. In April 1996, Alberta selected three marketers to dispose of the entire 125,000 b/d royalty share of the Alberta government. This process appears to work well with very low marketing costs of \$0.05 per barrel over the first 5 years. Price benchmarks based upon postings have been built into the agreements to establish performance measures based on the concept of a reasonable range of market prices. This system was put in place because the Alberta Department of Energy advised industry "that a cash royalty system would result in a financial loss to the province and would create an administrative burden for both industry and government."³¹

The existing RIK program in the U.S. has several problems that make it unattractive. For example, MMS noted in its discussion of the proposed rule that the Royalty Policy Committee concluded that "the current method of administering the Federal oil RIK program is time-consuming and burdensome on producers, small refiners, and MMS. The administrative burden includes reconciling what volumes the small refiner actually took, what value to assign the small refiner volumes, who is to pay for what volumes, and who owes for what volumes."³² Under the current system, MMS prices the crude oil sold to small refiners at the values reported on Form MMS-2014 by the producers who provide the in-kind crude oil. These values are subject to later adjustments. This method has been criticized as onerous to the producers and creating risk for the small refiners.³³ These problems can, however, be mitigated or eliminated through the use of a more market-based system similar to Alberta's. For example, because the Alberta system results in outright sales, there will be no subsequent price adjustments experienced by RIK purchasers following any lessee audit adjustments.

MMS should discuss with Alberta the operation of their program to determine whether that specific structure is appropriate or requires modification to be suitable to U.S. requirements.

V. CONCLUSIONS

Our analysis leads to the conclusion that the proposed NYMEX- and ANS-based valuation method is fatally flawed. It fails to satisfy the basic objective of measuring the value of crude oil at the lease, it lacks key attributes of a good royalty system, and it imposes unnecessary costs and risks on Federal lessees. MMS has performed no tests of its proposed rule to determine whether it would yield fair and reasonable estimates of crude oil value at the lease.

³¹ "Department of Energy Names Three Companies to Market Government's Royalty Crude," Government of Alberta News Release, April 25, 1996.

³² 62 Fed. Reg. 3750.

³³ 62 Fed. Reg. 3750.

Furthermore, as discussed in our earlier study filed with the Office of Management and Budget, the proposed rule would impose unnecessary and large administrative costs on lessees.

Overall, MMS has failed to demonstrate that its proposed method will result in fair and reasonable estimates of crude oil value at the lease, and there are many sound reasons to conclude that it will not. Consequently, the proposed rule should be withdrawn.

We discussed one existing approach to valuing oil for royalty purposes that, unlike the proposed rule, would satisfy the tests of a well-designed royalty system and would capture the value of oil at the lease when it is disposed of on the market: establishment of an effective Royalty-in-Kind program. The strengths and weaknesses of such an approach should be carefully evaluated by MMS. MMS should then work with industry to pilot test such a program and, if appropriate following a testing and refinement phase, MMS should propose a new rule.

ATTACHMENT I

**“Amendments to Proposed Regulations to Establish Oil Value for Royalty Due on
Federal Leases”**

MAY-28-97 02:22 From: LUCY R. QUEENLES, AD-ROYALTY

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DEPARTMENT OF THE INTERIOR
Minerals Management Service
30 CFR Part 206

**Amendments to Proposed Regulations to Establish Oil Value for
Royalty Due on Federal Leases.**

AGENCY: Minerals Management Service, Interior.

ACTION: Notice of further proposed rulemaking.

SUMMARY: The Minerals Management Service (MMS), Royalty Management Program (RMP) is proposing additional changes to its recently-issued proposed rule regarding valuation of crude oil produced from Federal leases. These new revisions would modify the eligibility requirements for oil valuation for arm's-length oil transactions and the procedures for collecting oil exchange information. MMS is also amending the list of aggregation points to include additional locations inadvertently left out of the earlier proposal.

DATES: Comments must be submitted on or before (June __, 1997).

ADDRESSES: Mail written comments, suggestions, or objections regarding the proposed rule to: Minerals Management Service, Royalty Management Program, Rules and Procedures Staff, P.O. Box 25165, MS 3101, Denver, Colorado, 80225-0165, courier address is Building 85, Denver Federal Center, Denver, Colorado 80225, or e-Mail David_Guzy@smtp.mms.gov. MMS will publish a separate notice in the Federal Register indicating dates and locations of public hearings regarding this proposed rulemaking.

FOR FURTHER INFORMATION CONTACT: David S. Guzy, Chief, Rules and Procedures Staff, telephone (303) 231-3432, FAX (303) 231-2194, e-Mail David_Guzy@smtp.mms.gov, Minerals Management Service, Royalty Management Program, Rules and Procedures Staff, P.O. Box 25165, MS 3101, Denver, Colorado, 80225-0165.

I. SUPPLEMENTARY INFORMATION:

Background

The MMS published a notice of proposed rulemaking January 24, 1997 (62 FR 3741) to amend its current Federal crude oil valuation regulations in 30 CFR Part 206. The initial comment period expired March 25, 1997, and has twice been extended -- to April 28, 1997 by (62 FR 7189) and to May 28, 1997 (62 FR 19966). By this notice, MMS is further extending the comment period until

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June __ 1997.

II. PUBLIC MEETINGS:

As part of the review process, MMS held meetings in Lakewood, Co. on April 15, 1997, and Houston, Tx. on April 17, 1997, to hear public comment on the proposal.

MMS heard a number of comments from attendees who were concerned about provisions in the proposal that would require small producers to pay on index pricing if they made small-volume purchases or had crude oil call provisions that were never exercised. MMS also received comments about Form MMS-4415. These comments included complaints about the amount of information required, some of which the commenting individuals believed that MMS does not need.

III. REVISIONS TO PROPOSAL

After hearing the comments in the public meetings, MMS is revising the proposed rule to address concerns raised and receive additional comments on the new changes. MMS recognizes that in cases where crude oil calls are not exercised, the production subject to federal royalties should not automatically be valued using index pricing. Also, if the production disposed of when a crude oil call is exercised is valued based upon the price that other parties are willing to competitively bid to purchase the production (the so-called the Most Favored Nation clause), then the oil should not automatically be subject to index pricing provisions under §206.102(c).

Specifically, MMS would further revise proposed §206.102 (a) (4) to read as follows:

- (4) You may not use this paragraph (a) to value oil disposed of under an exchange agreement. You may also not use this paragraph (a) to value production that is disposed of through the exercise of a crude oil call unless the price paid by the purchaser is established by a competitive bidding process and the purchaser must match or exceed the bids made by other parties.

MMS also recognizes that the requirement that purchasers of small amounts of oil must value oil using index prices is potentially too restrictive. It was not MMS' intent to require producers to pay royalties based on index prices if they purchase oil to make up for production shortfalls or if they must purchase crude oil to operate their lease.

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Therefore, MMS proposes to further revise proposed §206.102 (a) (6) to read as follows:

- (6) Even if you have an arm's-length contract for the sale of your oil, you must value your oil under paragraph (c) (2) of this section instead of this paragraph if you or any of your affiliates purchased more than 5000(?) barrels of crude oil from unaffiliated third parties during the 12 month period preceding the production month. Do not include in the total purchases any oil you purchased and used solely for lease operations.

MMS also heard comments concerning the filing of MMS Form-4415. Comments asked for clarification on who must file the form and what information is required.

MMS developed this form to gather information on the relative value of crude oil involved in exchange agreements and to determine appropriate location and quality differentials between the aggregation points and the market centers. To calculate specific differentials, MMS would take the volume-weighted average of the individual differentials derived from information payors report on Form MMS-4415. MMS will collect only information about exchanges where delivery occurs at an aggregation point and a market center. MMS seeks comments on the usefulness of collecting information about exchanges between two aggregation points. Lessees would not be required to report information from exchanges where oil is exchanged at the lease.

To address these concerns, MMS proposes to further revise proposed §206.105 (d) (3) to read as follows:

- (3) What information must I provide to support index pricing adjustments, and how are they used? You must submit information on Form MMS-4415 related to all of your and your affiliates' crude oil production involved in exchanges occurring between MMS specified market centers and aggregation points and not just information related to Federal lease production. All Federal lessees (or their affiliates as appropriate) must initially submit Form MMS-4415 no later than 2 months after the effective date of this reporting requirement, and then by October 31 of the year this regulation takes effect and by October 31 of each succeeding year.

The January 24, 1997, proposal for valuing Federal crude oil contained a list of aggregation points in Appendix R. That listing is incomplete. MMS proposes to further add aggregation points listed in Appendix A of this notice.

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MMS specifically requests comments on the revised paragraphs addressed in this notice. You also may comment further on any other provision in the January 24 proposed rule. If you have commented on other portions of the rule you do not need to resubmit those comments. MMS will respond to all comments in a final rule.
May __, 1997.

Lucy Querques Denett
Associate Director for Royalty Management